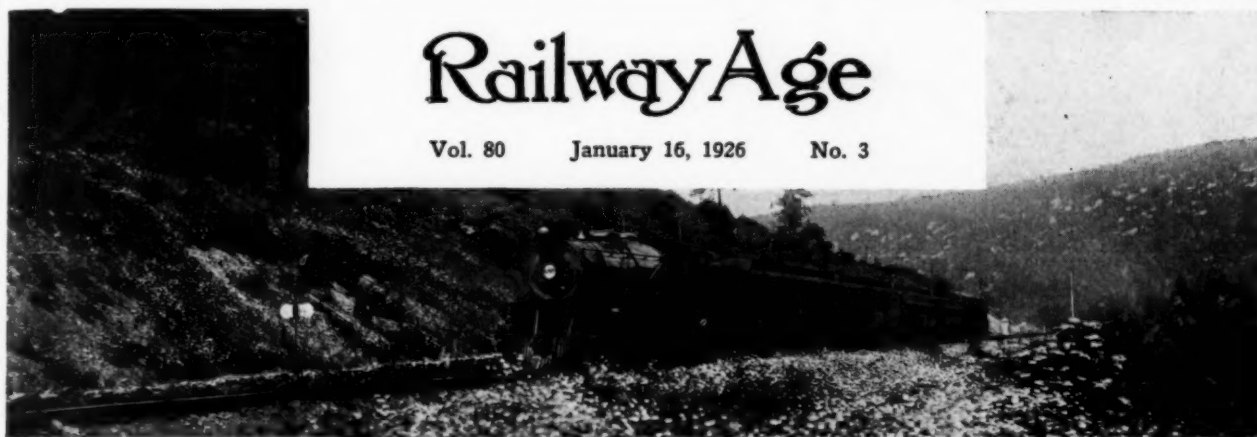


Railway Age

Vol. 80 January 16, 1926 No. 3



Buffalo, Rochester & Pittsburgh Train No. 3 Passing Vineyard Siding.

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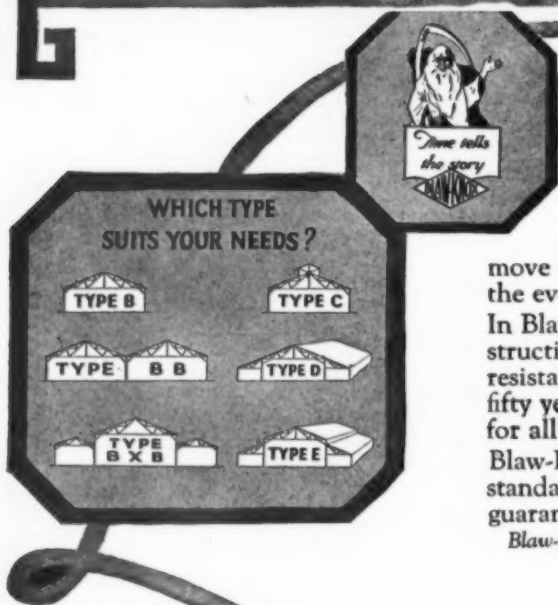
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Railway Age

Vol. 80, No. 3

January 16, 1926

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Page 5 of Advertising Section

Engineering Services of a High Order Pay

THE story of the Newark Bay bridge of the Central of New Jersey, a description of which appears in this issue, affords an unusual demonstration of the value of a high order of engineering skill in such projects. This does not mean that any greater degree of talent was employed in the design and construction of this bridge than in any other large railway bridge built in recent years, but that the evidence is such as to be more intelligible to the layman. Only a single case need be mentioned, the design of the 288 long span girders, preliminary estimates for which indicated the need for 23,750 tons of structural steel. No engineering structure is much more simple than a deck plate girder span. The procedure to be followed in design is one that has been long established and concerning which there is little disagreement. Yet painstaking studies of all the possible variations and a refinement in details were fruitful of a final design for these spans calling for only 19,500 tons of steel. The amount of steel saved, 4,250 tons, is enough to bridge a large river, while the saving in money is one which will pay many times over the cost of the services of the men responsible for it.

Few Executives Urge Consolidation Legislation

NO great unanimity of desire for legislation to hasten railway consolidations is indicated by the contributions by prominent railway executives to our Annual Review Number published January 2. Although in the questionnaire addressed to them they were asked to discuss what changes, if any, in the present federal laws regulating the railways they would favor, only seven out of the 29 executives of railways in the United States who contributed mentioned a change in the consolidation provisions of the law as desirable, and some of them merely mentioned such a change as desirable if any changes are to be made. On the other hand ten expressed themselves as opposed to any change in the Transportation Act and twelve said nothing about consolidation, although some of them discussed other changes as desirable, particularly as to the labor provisions. Doubtless the failure of so many to mention consolidation does not mean that they would be opposed to such legislation as is proposed, as some may feel that this is a matter that does not need any urging on their part and they may be more concerned as to other legislation which is not so likely to be suggested by others or about other legislation adverse to the interests of the railways which has been proposed in bills introduced in Congress. However, as many of the executives who did not mention the subject are among

those whose roads are popularly expected to figure in voluntary consolidations, it would seem that they are attributing much less importance to the matter than some people in Washington.

What Parliament May Do to the Canadian Railways

IN the speech from the throne delivered at the opening of the Canadian Parliament last week several recommendations of importance to the Canadian railroads were made. This address, while delivered by the Governor-General, is written by the Prime Minister and indicates the policy of the government. By the time this issue of the *Railway Age* has been printed the present control of the government of Canada by the Liberal party may be a thing of the past. The Conservative party outnumbers it but does not itself have a majority. The balance of power is held by a handful of Progressives who can turn out the Liberals whenever they feel like it. At any rate, however, even if this does transpire, it appears not unlikely that the Progressives will, because of their strategic position, secure some of their major legislative objectives. The speech from the throne stated that the Canadian Board of Railway Commissioners had been instructed to inquire into the causes of diversion of Canadian grain and other products through American ports and to take action to secure a greater utilization of Canadian ports. If this means the application of the Crow's Nest Pass rates over the National Transcontinental, it will be highly pleasing to both the Maritime and Prairie provinces, which now contribute most of the radical dissatisfied elements in Canadian politics. The speech likewise promised the early completion of the Hudson Bay Railway, which from a railroad point of view is about as ridiculous a waste of money as could be imagined. The speech also proposed the appointment of a Royal Commission to inquire into the complaints in the Maritimes that the Intercolonial Railway, now absorbed in the Canadian National, is not at the present time co-operating sufficiently in the upbuilding of this section. We do not believe that the program as outlined here can bring any satisfaction to persons honestly interested in seeing the vexing Canadian railroad problem brought to an early solution. From a standpoint of political expediency, which is outside our field, perhaps these proposals are necessary and railroad men should be thankful that they are no worse. As we said above, by the time this issue of the *Railway Age* appears the control of Parliament may have changed, but in view of the fact that the Progressives hold the balance of power it is not likely that any change made in these proposals will be toward reducing them—rather, unfortunately, they may be amplified to the greater delight of the Maritimes and the Progressives.

Railway Wages and "Profits"

AS has been pointed out in these columns before, when the net operating income being earned by the railways is small labor leaders oppose reductions of wages on the ground that employees are entitled to reasonable pay whether their employers are doing well or not, while, when net income increases labor leaders come forward with demands for higher pay based on the ground that employees are entitled to participate in the prosperity of their employers.

Arthur Keep, editor of the "Railroad Telegrapher," has adopted a statistical method of proving that the increasing prosperity of the railways is not being gained in spite of high wages, and that, in fact, wages are not high. "Labor," the official weekly organ of the railway labor unions, endorses this as "the best plan of all." It says: "He has computed the profits of the railroads per employee. This is done by taking the net revenues of the roads for a given year and dividing that sum by the number of railway employees during the same year." By this method of calculation he finds that the "profit from each employee" has been, in 1894, \$439; in 1904, \$491; in 1914, \$498; in 1924, \$786. "Their (the railways') profits per employee have increased 81 per cent in 30 years," says "Labor," "and 60 per cent in 10 years. That ought to satisfy any one."

The implication, of course, is that the railways are "exploiting" the employees by making too much profit out of their work. The figures given seem to show this. But there is a difference between figures and facts. The figures given are not facts. Therefore, they do not show what they purport to.

In the first place railway "net revenues" are not "profits." Taxes and joint equipment and facility rents

TABLE 1.

	Average investment per employee	Per cent net operating income earned on investment	Average net operating income per employee	Average wage per employee
Five years ending June 30, 1904...	\$9,141	5.05	\$462	\$584
Five years ending June 30, 1909...	8,547	5.40	462	644
Five years ending June 30, 1914...	8,940	4.95	442	743
Five years ending Dec. 31, 1919...	10,160	4.32	435	1,148
Five years ending Dec. 31, 1924...	11,285	3.23	372	1,678
Inc. or Dec. five years ended 1924 over five years ended 1904....	*+23	†-36	†-19	*+187
Year ended June 30, 1904.....	8,882	5.03	447	631
Year ended June 30, 1909.....	9,056	5.22	473	658
Year ended June 30, 1914.....	9,660	4.17	403	815
Year ended Dec. 31, 1919.....	9,684	2.46	238	1,486
Year ended Dec. 31, 1924.....	12,261	4.54	556	1,614
Inc. or Dec. 1924 over 1904.....	*+38	†-10.8	*+24	*+155.7

*Increase, per cent.

†Decrease, per cent.

must be paid out of net revenues before "net operating income" is arrived at. Whether net operating income can properly be called "profits" is a question, but, at any rate, it is the only part of the earnings from which interest and dividends can be paid. The figures given by Mr. Keep are not facts because they purport to show the "profit from each employee," which they do not do.

Since those who have made and used these figures have done so to show that the "profit per employee" being earned by the railways has been greatly increasing, it will be worth while to give some figures that are facts, and see what they show. For years since 1910 figures for Class I roads only will be used, because for recent years some statistics for all roads are not available. It must be considered, in this connection, that railway transportation is not conducted merely by man power. It is also conducted with a very large plant which represents

billions of dollars of investment. Increases in total earnings and net operating income are made possible not only by the work of employees, but also by the enlargement and improvement of the railway plant by the investment of capital.

In the first half of the accompanying table the average annual net operating income earned per employee and the annual average wage per employee are shown for five periods of five years each, the first ending with 1904 and the last with 1924. These figures show that in the five year period ending with 1924 the average investment in property per employee was 23 per cent greater than in the five year period ending with 1904, the percentage of net return earned on property investment 36 per cent less, the net operating income earned annually per employee 19 per cent less and the average annual wage received per employee 187 per cent greater. "Labor" says: "Railroad profits per worker have increased fastest in the period of which railroad statisticians complain most." The net operating income earned annually per employee in the five years ending with 1924 was less than in any previous five consecutive years in history, while the average wage received by each employee was far greater than in any previous period of five years in history. The editors of the "Railroad Telegrapher" and of "Labor" find it convenient to have poor memories. "Labor" refers to "the period of which railroad statisticians complain most," and then gives no figure for that period except for 1924, when net operating income per employee was \$556, as compared with \$467 in 1922, \$362 in 1921 and only \$9 in 1920:

Objection may be made to the use of statistics for the five year period ending with 1924 because it includes the year 1920 during eight months of which the railways had government guarantees of net return. Therefore, in the second half of the accompanying table there are given statistics for individual years spaced five years apart beginning with 1904 and ending with 1924. These figures show that in these twenty years the railways increased the investment in their property per employee 38 per cent while they got an increase in net operating income per employee of only 24 per cent. The net operating income earned annually on investment declined from 5.03 to 4.54 per cent. Meantime the average wage per employee increased from \$631 to \$1,614, or almost 156 per cent.

The following figures show for the same years the percentages of the total operating revenues earned by the railways which they paid out in wages, and which, after operating expenses and taxes were paid, were left as net operating income with which to pay fixed charges and dividends:

	Percentage or total wages to total operating revenues	Percentage of net operating income to total operating revenues
1904.....	41.39	29.3
1909.....	39.96	28.7
1914.....	44.17	21.8
1919.....	54.97	8.8
1924.....	47.72	16.4

In the year 1919 the railways were under government operation. The figures for other years, when they were under private operation, show that between 1904 and 1924 the proportion of the total earnings of the roads that the employees received in wages increased from about 41½ per cent to almost 48 per cent, while the proportion of total earnings that the railway companies received as net operating income declined from about 29 per cent to about 16½ per cent.

There has been no "exploitation" of labor in the railroad industry for many years at least, and there is none now. The increase in the average annual wage per employee has been much larger in proportion than the increase in the cost of living; and the increase in the average hourly wage has been still larger. On the other

hand, the return earned during the last five years on each dollar of capital invested in the railroad business has been the smallest in history, and the return the railway investor has received has been further reduced by the fact that he has been paid it in money of depreciated value. It is the investor in railway securities who has been "exploited."

Proposed Railway Labor Legislation

AFTER constant controversy between them for a decade regarding methods of settling labor disputes, the railways and the labor unions, through representatives chosen by them, have agreed upon proposed legislation which was introduced in Congress last week. The new measure is a compromise between the labor provisions of the Transportation Act, which most railway executives believe to be sound in principle, and the Howell-Barkley bill, which was drafted and advocated by the leaders of the railway labor unions.

Among the important points of difference between the Howell-Barkley bill and the new bill are the following:

First, the Howell-Barkley bill provided for the creation of a number of national adjustment boards upon which the railways and employees belonging to the national labor unions would have been required to be represented and on which non-union employees would not have been permitted to be represented. The members of these boards would have been paid their salaries from the government treasury. The new measure provides for the creation of adjustment boards "by agreement between any carrier or group of carriers, or by the carriers as a whole, and its or their employees"; and the members of the boards will be paid by those they represent. This avoids government compulsion, and leaves the way open for the creation of boards with any scope that it may be possible to agree on, and on which employees may be represented regardless of union or non-union affiliations.

Second, the Howell-Barkley bill provided for the creation of a federal mediation and conciliation board and for arbitration by agreement, but there could be no arbitration under it except by agreement, and no provision was made, if there was no arbitration by agreement, for any investigation or report regarding a dispute by any body representing the public. The new measure contains similar provisions for mediation and conciliation, and for arbitration by agreement, and something in addition that is important. This is a provision that in case of a dispute which is not settled by negotiations between the parties or by an agreement to arbitrate, and which threatens an interruption of transportation, the President of the United States may, in his discretion, create a board to investigate and report regarding the dispute. This board must consist entirely of representatives of the public appointed by the President, and until thirty days after its report "no change except by agreement shall be made by the parties to the controversy in the conditions out of which the dispute arose."

Third, the provisions of the Howell-Barkley bill would have made it virtually impossible to change any wages or working conditions except by some kind of agreement between the railways and the employees. Therefore the representatives of the employees, by refusing to make any such agreement, could have fixed the present wages and working conditions as permanent minimums. The new measure leaves open to the railways and employees equal opportunities to seek and secure changes in wages and working conditions.

Under the proposed legislation there would be no permanent body such as the Railroad Labor Board to hear and decide disputes, and containing permanent representatives of the employees, the railways and the public. Therefore, there would be no board the members of which by experience would acquire expert knowledge of the matters involved in labor controversies. Secondly, the labor provisions of the Transportation Act establish certain standards for measuring the reasonableness of wages and working conditions, while the proposed legislation says nothing regarding such standards, but in case of failure of the parties to a dispute to agree, leaves wages and working conditions to be determined, according to the best judgment of inexpert umpires on arbitration boards created by the parties, or of inexpert members of a board appointed by the President. The labor provisions of the Transportation Act were intended not only to promote peace, but to do this through decisions of an expert and impartial board which would do justice. The provisions of the new measure seem to aim more at peace between the immediate parties and less at justice between the railways, the employees and the public.

The railway labor leaders for some years have been carrying on a warfare to secure repeal of the labor provisions of the Transportation Act and abolition of the Railroad Labor Board. A majority of railway executives have opposed changes in the labor provisions of the Transportation Act. Finally, however, a majority of the executives have endorsed this new measure because they have become convinced that the labor provisions of the Transportation Act have become largely inoperative and because the labor leaders have made certain important concessions. The principal development that changed the attitude of many railway officers toward the existing labor provisions was the success achieved by the engineers' and firemen's brotherhoods in securing an advance in wages by threats of strikes after they had refused to obey subpoenas to appear before the labor board to testify and in defiance of a formal decision of the board. The concessions made by the labor leaders which rendered possible an agreement with the executives were, first, abandonment of their demand for national adjustment boards created by federal law, and, secondly, their reluctant acceptance of the provision for the creation by the President, in case of a dispute which threatens to interrupt transportation, of a fact-finding board to be composed entirely of representatives of the public.

Theoretically, the labor provisions of the Transportation Act are far superior to those of this new measure. In view, however, of what actually has occurred it is difficult to deny that, however good they may be in theory, the existing labor provisions no longer accomplish their purpose in disputes arising between the railways and the more powerful labor unions. A good law that will not work may be inferior to a poorer law that will work. If this proposed legislation is passed, as a result of the public agreement between representatives of the railways and of the employees, both will be under a moral obligation to the public to make it work in the interest not only of peace but of justice. This will be especially true as regards the leaders of the labor unions, because they are mainly responsible for the breakdown of the labor provisions of the Transportation Act, although they have been assisted in breaking them down by the managements of some railways.

In view of what has occurred in the past, and of the negotiations and agreement by representatives of the railways and of the labor unions as a result of which the new measure has been introduced in Congress, it is to be hoped there will be unanimity among railway executives and railway labor leaders in supporting it and that it will be enacted. There can be no doubt that its enact-

ment will be speedily followed by a movement of some classes of employees for higher wages. Its efficacy as a means of promoting peace will be speedily tested. But peace is not the only thing, or even the main thing, needed in the relations between railways and their employees. However it may be as to labor leaders, the managers of the railways must always recognize the fact that justice requires not only reasonable wages and working conditions for employees, but also reasonable rates for travelers and shippers, and reasonable net operating income for investors in railways securities. The western railways, largely as a result of the wages they are paying, are so unprosperous that they are seeking a general advance in freight rates. The railways in eastern and southern territory are more prosperous, but this is no evidence that wages on them should be advanced.

The sentiment of the public is quite as important to the railways as the sentiment of their employees, and the measure of the success of the proposed labor legislation, if it is enacted, will not be merely the extent to which it promotes peace with the employees, but also the extent to which it promotes justice as between the railway employee, the railway patron and the railway security owner.

Propective I. C. C. Men Quizzed

INTERSTATE Commerce Commissioners get many chances to ask pointed questions of the witnesses who testify before them, but, under the practice adopted by the Senate committee on interstate commerce, the latest candidates for appointment to the commission have been called upon to subject themselves to detailed quizzing as to their politics, experience and views regarding railway regulation. In the case of Thomas F. Woodlock, who as a financial writer has been putting his views on record for some 25 or 30 years, Senator Wheeler had somewhat of the advantage said to accrue to one whose enemy has written a book, and assumed the role of a prosecuting attorney. Mr. Woodlock, however, apparently gave a good account of himself and impressed the committee with his grasp of the subject, although naturally admitting that some of his opinions had changed and developed in a quarter of a century. R. V. Taylor made such a favorable impression upon the committee that they voted unanimously in favor of his confirmation almost before he had left the room. Declining to discuss general theories he declared his intention to decide questions brought before him by applying the law and the facts to each case with his best intelligence, and apparently some objection to his appointment on the ground that he was a former railroad officer was offset by his statement that he had been "kicked out" and that he was a poor man. Mr. Woodlock was faced with some prejudice against him because his career has been within the environment of Wall Street and because he has not always voted the Democratic ticket, although the large collection of his writings which Senator Wheeler had had looked up showed the same independence of view that he had displayed in occasionally voting for a Republican. An examination by a Senate committee lacks something of the character of a civil service examination but the plan of affording the President's nominees an opportunity to appear and give an impression both of their personalities and of their opinions has many advantages over the method of attempting to decide for or against confirmation in an executive session debate in the Senate. In such Senatorial debates a man is often condemned without a

hearing because of some former connection with a railroad or because he comes or does not come from a particular part of the country. However, if Congress should pass and the President should approve the bill now being framed by the Senate committee to provide for regional appointments to the Interstate Commerce Commission, the committee may content itself with sending for a map instead of summoning the nominees to appear personally.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Legislative Contribution to Progress, by Thomas I. Parkinson. A study of the quantity and quality of bills introduced and laws enacted in the state legislatures and the federal Congress. Table II shows by states and the Congress numbers of bills introduced and laws enacted 1906-1925 inclusive. 17 p. Published by Association of Life Insurance Presidents, New York City.

A New L. M. S. Plan, by London, Midland & Scottish Railway. The warehousing methods of this railway illustrated and described. 22 p. Published by London, Midland & Scottish Railway, London, Eng. Available from American Office, L. M. S. Ry., New York City.

The Ports of Charleston, S. C., and Wilmington, N. C. Prepared by Board of Engineers for Rivers and Harbors, War Department, and U. S. Shipping Board. Port Series No. 9. 159 p. Illus. Maps, Diagrams. Published by Government Printing Office, Washington, D. C. 50 cents.

Safety in Verse, compiled by National Safety Council. A collection of poems relating to safety. 34 p. Published by National Safety Council, Chicago, Ill.

Travel Routes and Costs in South America, by Rollo S. Smith. Railway and steamship routes and fares, travel time, etc. Trade Information Bulletin No. 381, U. S. Department of Commerce. 20 p. Published by Government Printing Office, Washington, D. C. 10 cents.

Periodical Articles

International Air Transport, by Edward P. Warner. Particularly problems of effective regulation of this form of transportation. Foreign Affairs, January, 1926, p. 278-293.

The Making of a Master Railroad Man, by Herbert Corey. The career of L. F. Loree, President of the Delaware & Hudson. Everybody's, December, 1925, p. 19-24.

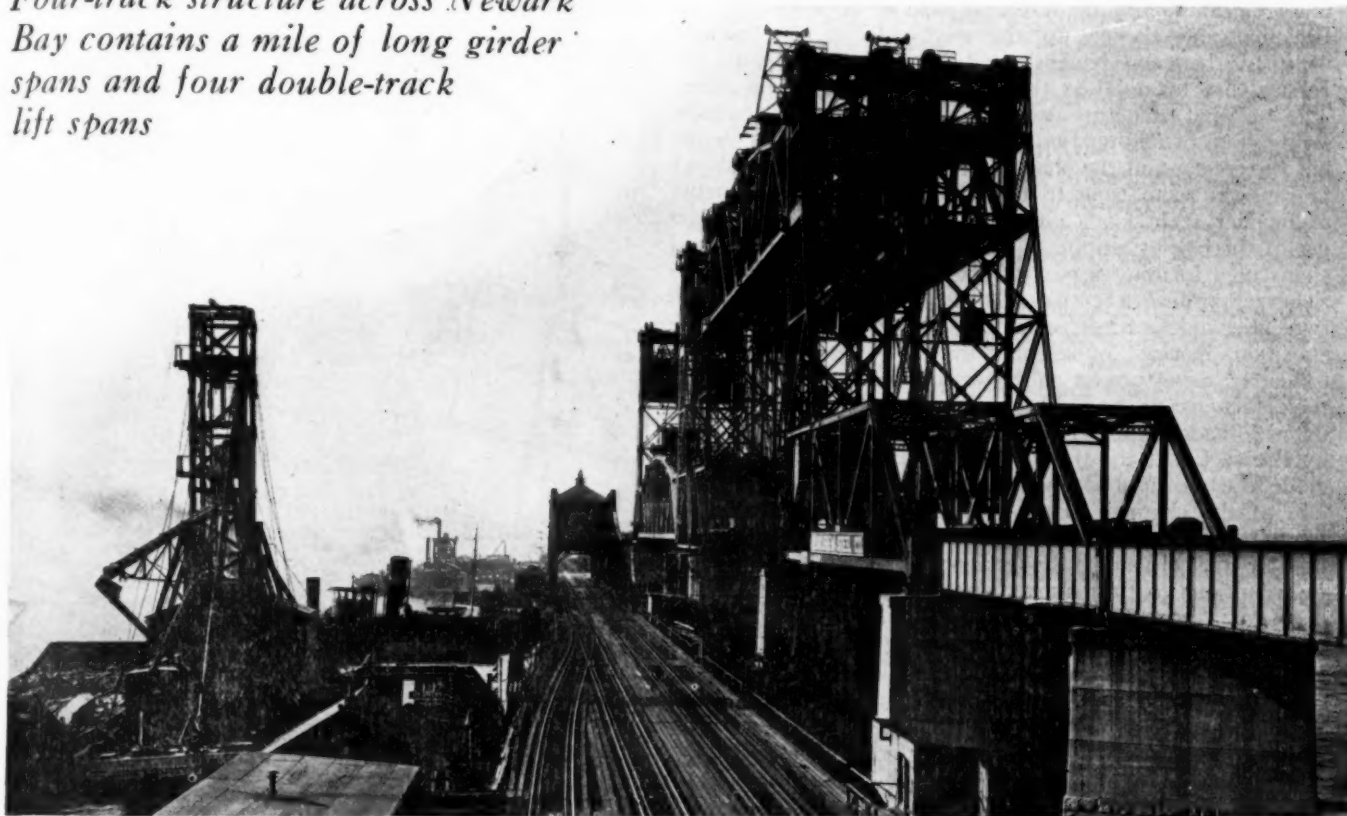
The Motor Bus as a Common Carrier, by Henry R. Trumbower. Analysis of operations in Arizona, Connecticut, Kentucky, Maryland, New Hampshire, Oregon, Washington, and West Virginia, including "relative service of competing bus and rail lines," p. 215-216. Public Roads, December, 1925, p. 213-219, 232.

Rail Service Efficient. Annual report of Transportation committee, Associated General Contractors, on handling of building materials. Constructor, January, 1926, p. 39, 59, 61.

Recent Development in Industrial Relations in the United States, by Herbert Feis. The railway industry is mentioned as an outstanding example of improved relations between management and employees, and improved operating efficiency. International Labour Review, December, 1925, p. 776-798.

Central of New Jersey Builds Remarkable Bridge

Four-track structure across Newark Bay contains a mile of long girder spans and four double-track lift spans



The New Lift Spans as Seen from the Old Bridge

THE Central Railroad of New Jersey is now completing a bridge across Newark Bay which is in many respects a remarkable structure. It is 7,411 ft. long and carries four tracks, but as it has been constructed substantially in the form of duplicate double-track bridges, it represents nearly three miles of two-track bridge. In point of the quantity of steel used in its construction it ranks among the largest bridges in the country, 31,000 tons of structural steel being employed, not including 8,000 tons used in structures embodied in the embankment approaches. As provision has been made for two independent channels for the passage of shipping the bridge structure includes four, two-track vertical lift spans, two of 305-ft. span and two of 216½-ft. span, center to center of piers.

But the most unusual feature of the structure is the extensive use of long span girders, for with the exception of the lift spans and their flanking tower spans and 700 ft. of viaduct construction at the east end, the superstructure consists of deck plate girder spans, 36 of which are skew spans 125 ft. long center to center of piers. In addition there are five girder spans of odd lengths. The construction of this deck girder viaduct required the fabrication and erection of 288 girders 124 ft. 6 in. long weighing 54.07 tons each, and 40 girders of lengths ranging from 87 ft. to 120 ft. A more tangible idea of the magnitude of this girder construction is to be had from the fact that the transportation of these girders from the fabricating

plant to the bridge site required 20 round trips of a train of 56 flat cars, the length of these girders being such that only 16 of them could be handled on each trip.

The substructure for this bridge embodies two abutments, 85 double-track piers for the girder and tower spans, four four-track piers for the lift spans and 48 pedestals for the towers of the viaduct approach at the east end. This substructure, together with three subways to be incorporated in the embankment approaches, required the driving of 17,000 piles and the mixing and placing of 120,000 cu. yd. of concrete. The estimated cost of the entire project, including the approaches, is approximately \$15,000,000.

Aside from its magnitude the structure is distinctive in the extent to which a duplication of parts was carried out in developing the design and in the advantage taken of such duplication to effect marked economies in construction. The quantities involved were such as to justify extensive studies in advance of actual design for the purpose of securing every possible economy, and that this proved profitable is attested by the fact that the weight of the structural steel required for the long girder spans was reduced from 47,500,000 lb. as estimated for the original design to 39,000,000 lb. actually involved in the plans finally approved. Advantage was also taken of the opportunity for the perfection of original designs for various details. This led to the development of a new type of end bearing for the girder spans and to a number

of innovations in the four lift spans and their supporting towers.

Will Expedite Both Water and Rail Traffic

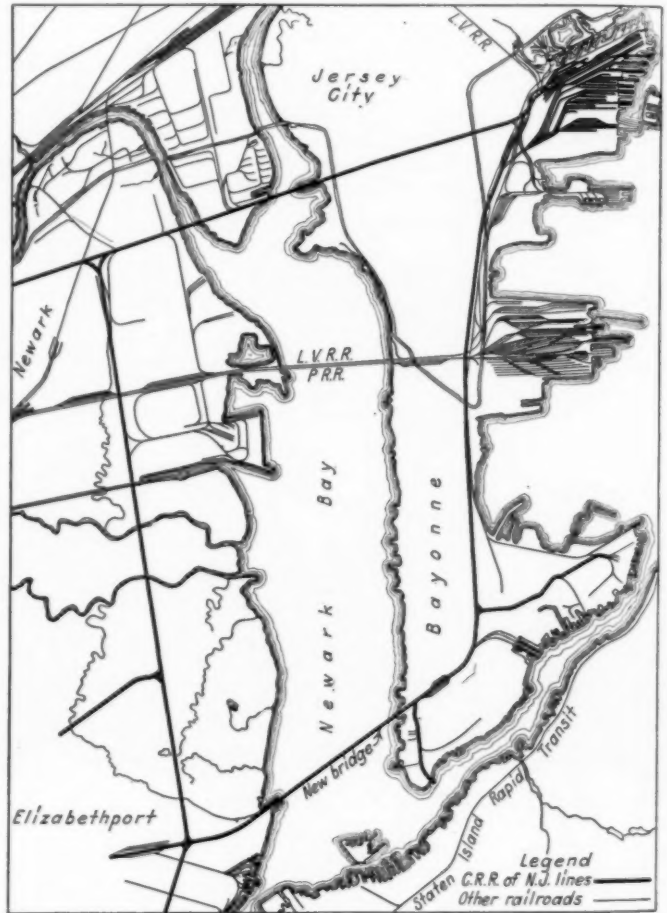
The new bridge is being built to replace a two-track structure built originally in 1863-65 as a means of extending the main line of the Central Railroad of New Jersey from Elizabethport, on the west side of Newark Bay, to Bayonne and thence up the east side of the narrow peninsula between Newark and New York bays, to the Jersey City terminal at the mouth of the Hudson river. The original structure was a pile trestle with a single swing span providing two waterway openings 75 ft. wide, but the trestle and the channel structure have been subject to renewal from time to time to meet the requirements of heavier train loads and a progressive increase in the use of the bay by shipping. As a consequence the channel spans now forming a part of the old bridge comprise two Scherzer rolling lift spans built in 1905 which provide two independent 85-ft. waterway openings. But with the enormous increase in shipping that has attended the great industrial development on Newark bay and its tributaries, the Hackensack and Passaic rivers, these spans have proved inadequate. The condition has been aggravated by the fact that the trestle structure is so low as to preclude the passage of even a small boat without opening one of the channel spans. As a result, the passage of 57,000 boats in 1924 required some 21,000 openings of one or the other of the channel spans with attending interruptions to train movements over the bridge.

Growth of railway traffic has also been a factor in the obsolescence of the old bridge, which carries a large portion of the through and suburban passenger traffic to and from the Jersey City terminal, as well as the heavy freight movement originating at or destined to the railroad's Jersey City terminals, which occupy two miles of waterfront on New York bay. In all about 300 trains used this route, a volume of traffic which, taking into account its diversified character, has necessitated provision for four main tracks, the capacity of which has been limited by the delays incident to converging them to two tracks for the distance across the bridge.

These considerations led to negotiations with the United States War Department concerning plans for a new four-track bridge to be built parallel to and alongside the old structure. This resulted after several years in the approval by the secretary of war and the chief of engineers on December 30, 1922, of a plan which provides two channel openings, one of which affords a clear channel width of 200 ft. and the other a channel width of 125 ft. at right angles to the axes of the channels, which are at an angle of 59 deg. 11 min. with the center line of the bridge. It provides also that all spans of the bridge lying between pier bulkheads on each side of the bay must clear mean high-water by a vertical distance of 35 ft. and that the channel spans, which are of the vertical

lift type, provide a head room of 135 ft. when fully opened. The plan provides further that all piers in the bridge except those supporting the lift spans and their towers and two girder spans flanking the channel structure be spaced 125 ft. center to center and be placed parallel to the axis of the channel.

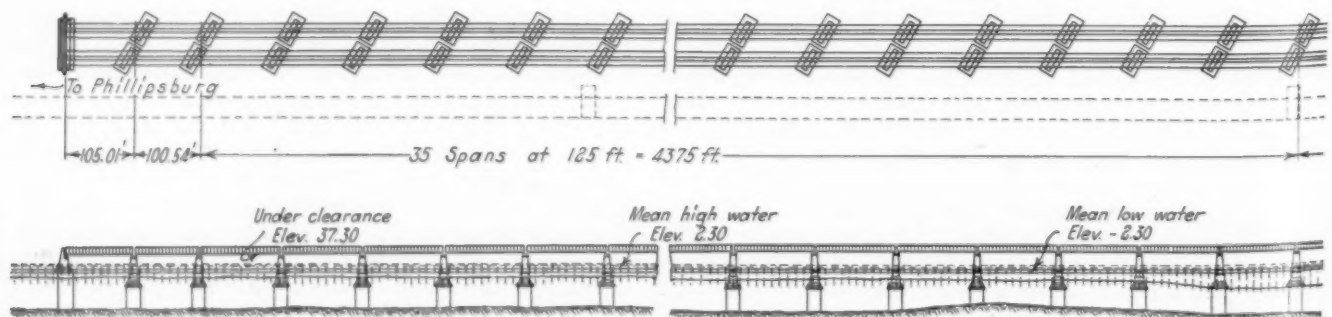
The seven piers supporting the lift spans and their towers are placed perpendicular to the center line of the



The Newark Bay Bridge in Its Relation to the New York Bay Terminal Development

bridge, a condition which required span lengths for the lift spans of 305 ft. and $216\frac{1}{2}$ ft., previously noted, measured center to center of piers, or 299 ft. and 210 ft. 9 in. respectively, measured center to center of end bearings.

As stated previously the structure is virtually two double-track bridges spaced 41 ft. center to center so that with tracks on each bridge 13 ft. center to center the two inside tracks are 28 ft. center to center. The two super-



West Girder Span Viaduct of the Newark Bay Bridge

structures are entirely independent, and this is true also of the substructure, with the exception of the abutments and the four piers supporting the lift spans. The center line of the new bridge is 93 ft. north of the center line of the old structure.

The requirement in the approval plan for a clear height of 35 ft. under all spans is of marked advantage to both the water and rail transportation. The low trestle

ture will eliminate trouble with ice and the greater clear height will enable many of the smaller craft to pass under the bridge without the opening of the channel spans, and it is estimated that this will reduce interruptions to train movement because of bridge openings by 40 to 50 per cent.

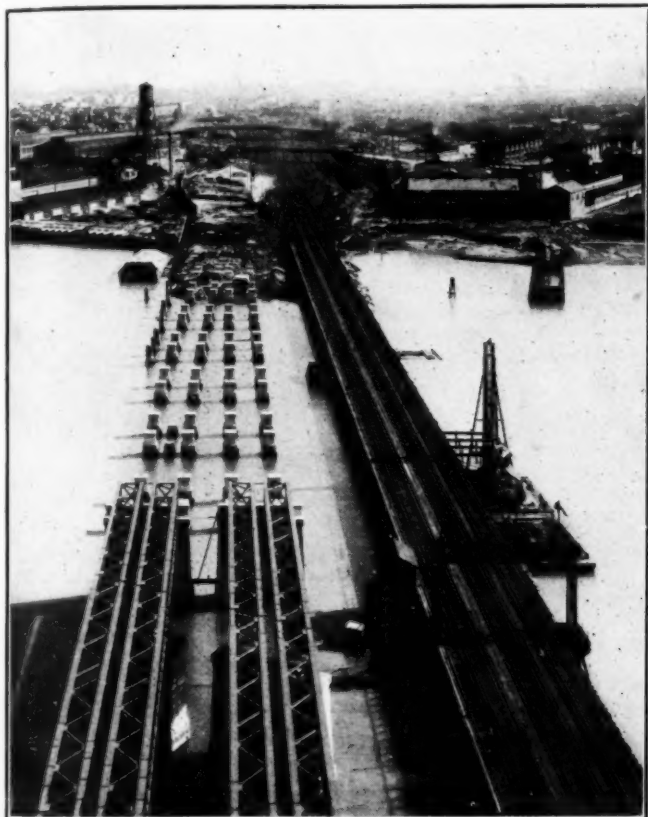
The provision for 35-ft. clear headroom under the bridge introduced a serious complication, however, in that it required a raise in the grade of the tracks of about 32 ft. above the track level on the old bridge. This change of grade with gradients not exceeding 0.4 per cent against westbound trains and 0.3 per cent against eastbound trains, together with the 93-ft. offset of the center line from that of the old bridge, entailed extensive changes in the approaches for a distance of a mile to the east and a mile and three-quarters to the west. In addition to the grading, which totaled 2,000,000 cu. yd., the work on the approaches included the construction of subways for Avenue A, and the Hudson County boulevard in Bayonne on the east approach, and the construction of a two-track under-crossing in the west approach for the transfer of freight traffic from the north side of the passenger tracks west of the bridge to the two southerly tracks on the bridge.

Lift Spans Embody Interesting Features

In the plan as approved the adjacent bulkhead lines of the two channels are 174 ft. apart, a sufficient distance to permit of the construction of two lift spans with their flanking towers as independent structures, yet close enough so that the rear legs of the adjacent towers could be supported on a common pier, and to permit all four lift spans to be controlled from one operator's house centered over this pier.

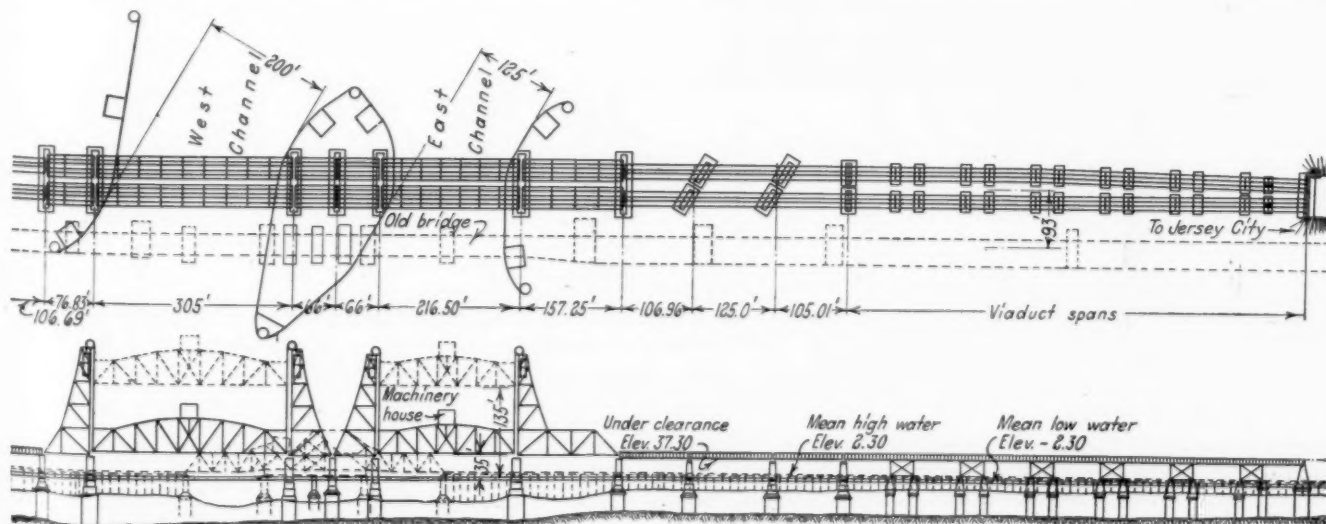
The lift spans and towers provide a side clearance of 8 ft. from center lines of track, and a vertical headroom of 24 ft. 2 in. above the base of rail. The trusses of the lift spans were made of silicon steel with members proportioned on the basis of a unit stress of 24,000 lb. per sq. in. in tension, as compared with 16,000 lb. per sq. in. for ordinary structural steel which was used in all other parts of the bridge as a means of obtaining a minimum weight for the movable spans.

In form, the trusses are of the Parker type with a horizontal extension of the top chord from the hip joint to the end of the span, where it receives the hitch connection of the counterweight cables, the weight of the span being transferred to this point by a vertical hanger



The East Approach as Seen from the Lift Span Towers.
Bayonne, N. J., in the Background

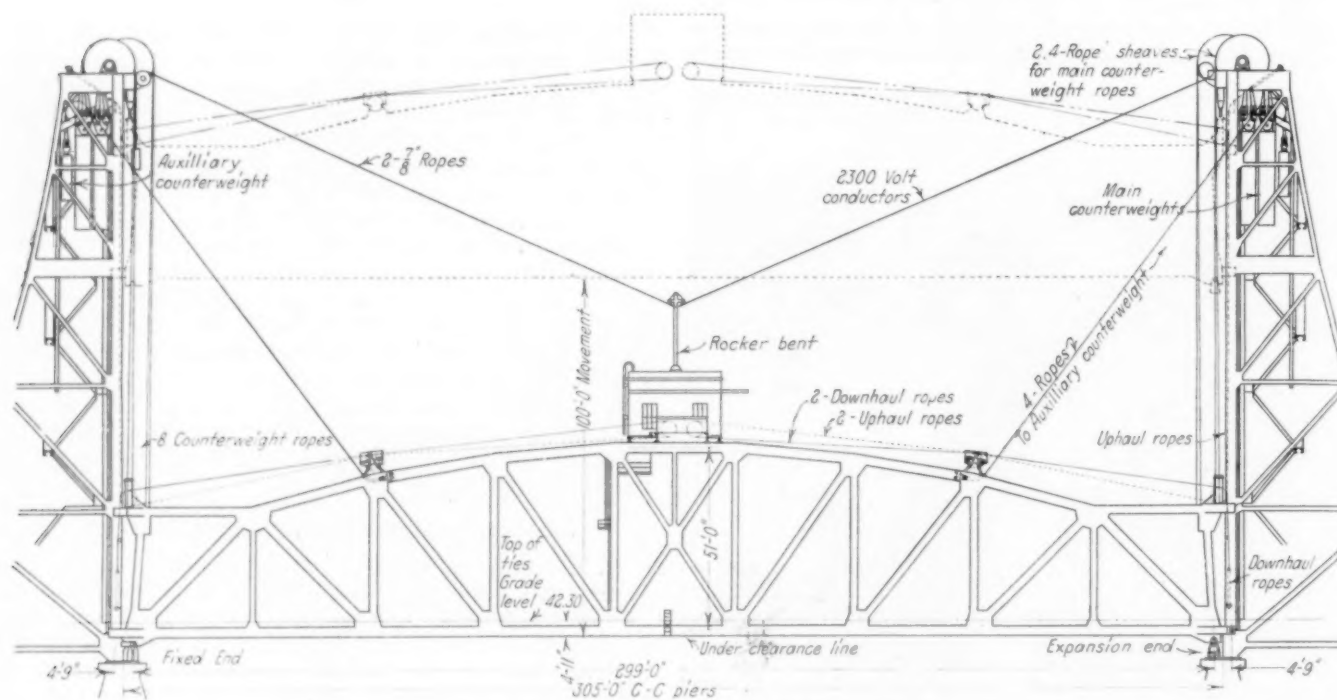
of the old bridge with closely spaced bents not only precluded the passage of small boats without going through the channel openings, but also resulted in ice jams in the winter which interfered to a considerable extent with shipping. The long spans of the new struc-



The Lift Spans and East Viaduct of the Newark Bay Bridge

member framed into the bottom chord end joint. The hitch is made in this top chord member rather than in the hangers direct, because of an innovation in the sheave and rope arrangement adopted in this bridge. The load requirements were such as to call for eight counterweight

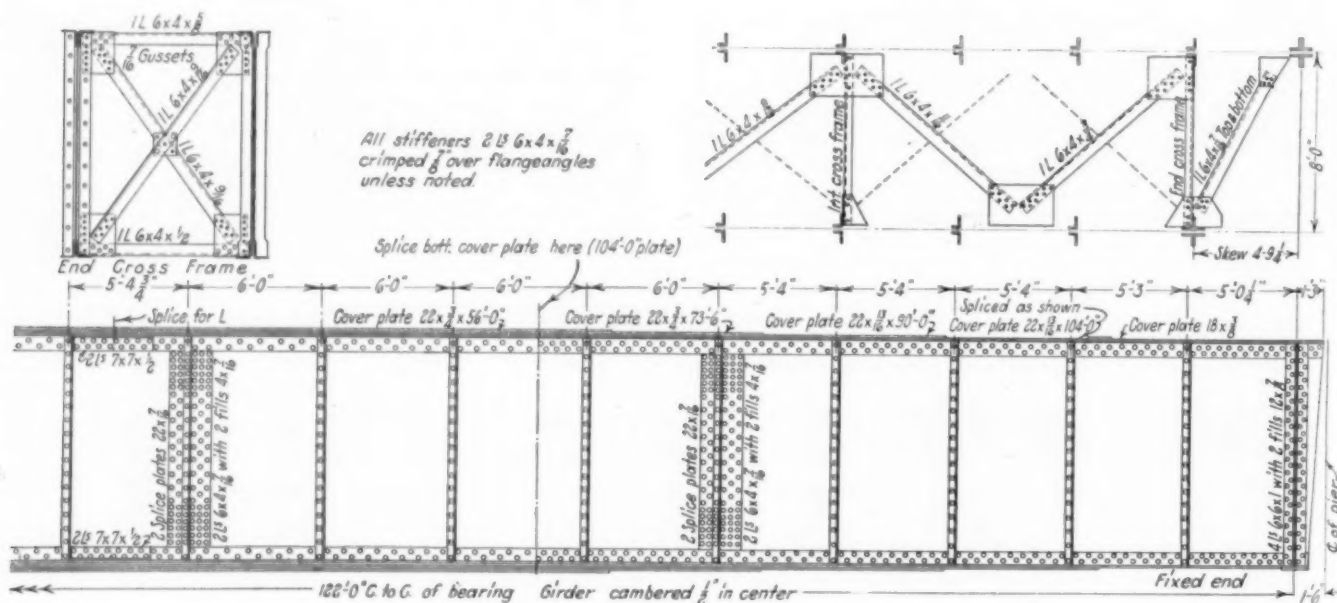
five feet center to center in a longitudinal direction. This simplified the design of the equalizers since there are four, four-rope equalizers instead of two, eight-rope equalizers on the trusses and counterweights at each corner of the span. In the 299-ft. span this connection to the trusses



Outline Elevation of the 305-ft. Lift Spans

ropes at each corner of the span and after considerable study it was found that a single sheave designed to accommodate eight ropes introduced difficulties such as to point to the advisability of providing two, four-rope

and counterweights is made with 8-in. pins and in the 210-ft. 9-in. span with 6-in. pins. The ropes in the longer spans are $2\frac{1}{8}$ in. in diameter and in the smaller span $1\frac{3}{4}$ in. in diameter. The sheaves comprise single castings of



Part Plan of the Long Span Girders

sheaves at each corner. The development of this plan led to the use of two separate counterweights, one behind the other, with two sets of sheaves offset a distance equal to the distance between the center lines of counterweights, namely, five feet. It followed, therefore, that there must be two hitches of the counterweight ropes to the trusses

cast steel with a 14-ft. pitch diameter for the longer spans and a 14-ft. 5-in. diameter for the shorter spans.

The change in the distribution of the weight of the counterweight ropes in the open and closed position of the bridge has been compensated in a novel manner in this bridge by means of auxiliary counterweights suspended

from 6½-ft. diameter sheaves in each tower by means of four 1-in. ropes attached to the spans at the struts connecting the U-2 joints in the top chords. From an examination of the drawing it will be seen that the vertical component of the tension in these ropes is such when the bridge is closed as to exert an appreciable uplift to compensate for the weight of the main counterweight cables



The Bearings for the Girder Spans Are of Novel Design

whereas when the bridge is fully opened this vertical component reduces virtually to zero.

The Mechanical Equipment

The lift spans are raised and lowered by power equipment in houses mounted on the top chords over the middle panel. The uphaul and downhaul ropes are 1-in. in diameter on the 299-ft. spans and ¾-in. in diameter on the 210-ft. 9-in. spans. The four winding drums on each span are propelled by two, 200-hp. electric motors designed for 2,300-volt, 60-cycle, alternating current, the use of current of this high potential having been decided upon as a means of obviating the installation of a substation on the bridge which would have been necessary for stepping down the current to a lower voltage. The two motors are geared to the drums so as to operate in unison under normal conditions but each motor is capable of handling the span alone. An auxiliary power unit for use in the event of the failure of current supply has been provided on each span in the form of gasoline engine. These are all four-cycle Sterling engines, those in the 299-ft. spans being six-cylinder, 180-hp. engines and those in the shorter spans, four-cylinder, 140-hp.

Current is delivered to the bridge by submarine cables carried to the tops of one of the towers of each span and thence to the top of a rocker bent mounted at the top of the machinery house, this rocker bent comprising a unique device for keeping the conductors taut in all positions of the span while being raised or lowered. This is accomplished by carrying two ¾-in. diameter ropes from the rocker bent to a sheave in the top of the opposite tower from that to which the conductor is carried, a counterweight on the end of these ropes serving to deflect the bent a sufficient amount during the entire travel of the span to keep the conductor taut.

The stopping and starting of the motors, locking of the span in the closed position, closing and opening of rail locks and the various functions of the interlocking plant

are all handled with remote electric control from the operating tower mounted over the pier between the two pairs of lift spans.

The Girder Spans Are of Simple Design

As stated previously the design of the girder spans was given careful study with a view to obtaining the minimum weight, the greatest possible duplication of units and a design of such simplicity as to preclude complications in fabrication. There are 36 spans for four tracks, all 125 ft. center to center of piers, requiring 288 girders, 124½ ft. long all alike. In addition 40 girders of different lengths were required for one skew span of 100.5 ft. and four spans in which the transition is made from skew to square ends. The depth of all girders is the same, 10 ft. 0½ in. back to back of angles. The design as seen in the drawings is exceedingly simple, the use of side plates in the flanges being avoided by providing a greater proportion of the flange area in cover plates than is the usual



Looking West from the Top of the West Lift Span Tower. Locomotive Crane in Service Placing Floor on Girder Spans

practice. Thus, the total flange area required for a total bending movement of 177,924,000 in. lb. is 92.3 sq. in., for which an actual net section of 92.68 sq. in. was provided. Of this, 54.62 sq. in. or 59.2 per cent is in the cover plates. The flange angles are 8 in. by 8 in. by ¾ in. The cover plates are 22 in. wide with a maximum thickness of 13/16 in. The web plates are 9/16 in. thick, intermediate stiffener angles are 6 in. by 4 in. by 7/16 in. and end stiffeners 6 in. by 6 in. by 1 in. Gross frames and lateral braces are all of 6-in. by 4-in. angles. The girders for each track are spaced 8 ft. center to center.

The bearings are of a unique character and deserve special mention. The fixed ends are of the hinge type with 3-in. hinge pins, but the expansion ends compromise a departure from usual practice in that a single rocker is provided in place of a nest of rollers with the advantage

of simplicity and ready access to the bearing faces for cleaning and inspection.

All Materials Were Delivered by Water

The density of traffic on the old bridge precluded the use of tracks on this structure for the delivery of any materials on the new bridge, while the change in grade entailed such extensive work on the approaches that no tracks could be carried to either end of the bridge in time for the handling of construction material for the substructure or for the delivery of superstructure steel for progressive erection from the ends. Consequently all construction was handled with marine equipment and materials were delivered on barges. This necessitated the dredging of a channel along the north side of the new bridge each way from the channel for the use of the marine equipment in addition to the necessary dredging at the site of each pier. The material excavated from this channel, totaling 622,000 cu. yd., was removed by the hydraulic method and delivered to the embankment of the west approach.

With the derrick equipment on the north side of the bridge, the eight girders of each span were erected progressively from south to north. It was proposed to follow the same procedure for the lift spans and tower but this implied complete falsework for both the north and south units. Consequently it was decided to drive falsework only in the location of the north lift spans and erect the south spans on this falsework first with the end bearings on wheel dollies so that as soon as the spans could be swung they were rolled over into correct position to make room for the re-use of the falsework for the erection of the north spans. The shorter lift spans with their towers were erected first, leaving the west channel open for the passage of boats. Then after these spans could be raised, work was started on the two longer channel spans.

The entire structure has an open deck, the ties being 10 in. wide with a minimum depth of 11 in. All timber is creosoted yellow pine framed in advance of treatment, this framing being carried out without any difficulty in spite of the large number of variations in dimensions required to compensate for the difference in the thickness of cover plates, etc. All the ties, rails, and deck material were set in place by a locomotive crane which was hoisted up on the bridge by a marine derrick which also delivered the ties to the locomotive crane until the ties and rail had been laid on the two north tracks. Following this gondola cars were set up on these tracks and loaded with ties to serve the locomotive crane while placing the deck on the two southerly tracks.

The entire project is under the direction of the engineering department of the Central Railroad of New Jersey, A. E. Owen, chief engineer, J. J. Yates, bridge engineer, A. M. Zabriskie, principal assistant engineer and H. E. VanNess, construction engineer. Dr. J. A. L. Waddell, consulting bridge engineer of New York, was retained to collaborate in the design of the lift spans. The piers for the girder spans were constructed by Henry Steers, Inc., New York, and the main piers, which were built by the pneumatic process, by the Arthur McMullen Company of New York. The lift spans and towers were fabricated and erected by the American Bridge Company and the girder spans and the viaduct structure at the east end by the Bethlehem Steel Company. The Norwood Noonan Company, Chicago, has a contract for the electrical equipment of the movable spans and the Union Switch & Signal Company for the signal installation. The Atlantic, Gulf & Pacific Company and the Great Lakes Dredge & Dock Company did the dredging.

A description of the substructure and an account of the construction methods will be presented in a later article.

Hearing on Gooding Bill

WASHINGTON, D. C.

HEARINGS on the Gooding long and short haul bill before the Senate committee on interstate commerce were adjourned on January 7 to January 18, after Thomas K. Ashburn, chairman of the Inland Waterways Corporation, and J. A. Ford, of Spokane, secretary of the Intermediate Rate Association, had testified in favor of the bill. Commissioner Esch of the Interstate Commerce Commission is to be the next witness, and many opponents of the bill have asked to be heard. General Ashburn, who appeared at the request of Senator Gooding, said that as long as it remains in the power of the railways to reduce rates on account of actual water competition they can kill water competition and water transportation cannot "come back," and it is time for the government to show that it intends to have water transportation revived. The railroads can then devote their attention to other matters and avoid the losses they have sustained in trying to meet water competition. As he had insisted that the inland waterways now being operated by the government have been a success he was asked what they were earning on the investment. He said that the Mississippi river operations show a return of about 4 per cent on the investment but that the Warrior river operations lose almost as much as the other part of the service makes. However, he said, there is a saving of about \$1.25 per ton to the shipper in the rates.

In a general discussion of water transportation Senator Cummins asked what benefit the Panama canal is to the territory between the Mississippi river and the Rocky mountains. General Ashburn replied that at present it is a detriment but that the remedy lies in the development of inland waterways in that territory. Senator Cummins said that the people in that section are paying their share of the cost of the canal twice.

Senator Couzens asked what is the advantage of spending the taxpayers' money to develop waterways over spending it in a direct subsidy to the railroads to carry freight at less than cost, to which General Ashburn replied that it would cost less to develop the waterways.

Mr. Ford gave testimony similar to that he presented last year before the House Committee, describing the freight rate discriminations against the intermountain territory and the effects which he said would result if the fourth section applications of the transcontinental lines should be granted by the Interstate Commerce Commission. He said that although the commission's examiner recommended against granting the applications 14 months ago the commission has not yet rendered a decision; but there is no certainty as to what it will do and the intermountain country desires a maintenance of the condition they have enjoyed for eight years since terminal rates were applied as maxima at the intermediate points. He said the railroads were "clubbed" into making the applications by the commercial interests of Chicago and the Pacific coast and that the Chicago shippers desire to regain the markets they have lost to eastern shippers who use water transportation, although they are also asking the government to spend money to give them a St. Lawrence and a lakes-to-the-gulf waterway while they are seeking to destroy the investment in the Panama canal.

The committee had hoped to conclude the hearings on the bill in a day or two, on the ground that the subject had been thoroughly thrashed over at previous hearings, but Senator Gooding had witnesses ready to take all the time that had been allowed; and the committee received from Chicago and various other parts of the country so many requests to be heard that it decided to allow three more days, January 18, 19 and 20.

New Railway Labor Bill

Roads and employees agree on plan for settlement of labor disputes

A PLAN providing new machinery for the adjustment of railway labor disputes, agreed upon by representatives of the roads and of the railway labor organizations as a result of conferences extending over the past several months, is provided for in a bill introduced in Congress on January 8 by Chairman Watson of the Senate committee on interstate commerce as S. 2306 and by Chairman Parker of the House committee on interstate and foreign commerce as H. R. 7180. The plan is designed to end the six-year experiment under which railway wages and working conditions have to a large extent been regulated by the Railroad Labor Board and the bill would repeal both Title III of the Transportation Act and the Newlands act of 1913, which also represented an agreement between the railways and the unions. The Board of Mediation and Conciliation which that act created has gone out of existence for want of appropriations but the act was not repealed. The new bill also will take the place of the Howell-Barkley bill, which was urged by the railway labor organizations at the last session of Congress but which failed of passage.

The bill abandons the plan of direct representation of the public in the decision of railway labor controversies, although it provides for a Board of Mediation appointed by the President and also for boards of arbitration in case both parties consent to arbitrate. Although there is no provision for any tribunal of final decision except by agreement to arbitrate, the bill is intended to prevent any strike at least for 30 days after a report by an emergency fact-finding board to be appointed by the President in case an unsettled dispute threatens substantially to interrupt interstate commerce.

Announcement that an agreement had finally been reached was made in a statement issued jointly by Alfred P. Thom, general counsel of the Association of Railway Executives, and Donald R. Richberg, counsel for the organized railway employees, on January 7, after the plan had been outlined to President Coolidge at the White House. In the statement they expressed the belief of the representatives of both carriers and employees that the creation of the machinery proposed and the opportunity and obligation to pursue the methods provided "will result in the amicable adjustment of all future labor disputes and prevent any interruption of transportation." The provisions of the bill had been explained to the President the day before by Mr. Thom and on January 7 by a delegation representing the organizations—Mr. Richberg, W. N. Doak, president of the Brotherhood of Railroad Trainmen, D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, and Bert M. Jewell, president of the railway department of the American Federation of Labor. W. W. Atterbury, president of the Pennsylvania, and chairman of the committee of railway executives which handled many of the negotiations leading up to the drafting of the bill, also called on the President on January 7 to thank him for his assistance in bringing about a situation which permitted both sides to get together on so important a matter.

In the joint statement Mr. Thom and Richberg called attention to the fact that the President had, in more than one message to Congress, invited the rail carriers and their employees to confer in the effort to agree upon a

method of adjusting labor disputes which will not only be mutually satisfactory and protective of their rights, but which will also properly safeguard the interests of the public, and they said that the agreement had been reached in conferences held at this suggestion. The provisions of the bill were summarized as follows:

First. That it shall be the duty of the parties to exert every reasonable effort to make and maintain agreements.

Second. Any and all disputes shall be first considered in conference between the parties directly interested.

Third. Adjustment boards shall be established by agreement, which shall be either between an individual carrier and its employees, or regional, or national. These adjustment boards will have jurisdiction over any disputes relating to grievances or to the interpretation or application of existing agreements, but will have no jurisdiction over changes in rates of pay, rules or working conditions. It is, however, provided that nothing in the act shall be construed to prohibit an individual carrier and its employees from agreeing upon settlement of disputes through such machinery of contract and adjustment as they may mutually establish.

Fourth. A Board of Mediation is created, to consist of five members appointed by the President by and with the advice and consent of the Senate, with the duty to intervene, at the request of either party, or on its own motion, in any unsettled labor dispute—whether it be a grievance or a difference as to the interpretation or application of agreements not decided in conference or by the appropriate adjustment board, or a dispute over changes in rates of pay, rules or working conditions not adjusted in conference between the parties. If it is unable to bring about an amicable adjustment between the parties, it is required to make an effort to induce them to consent to arbitration.

Fifth. Boards of arbitration are provided for, when both parties consent to arbitrate, also the method of selecting members of the boards and the arbitration procedure. Any award made by the arbitrators shall be filed in the appropriate district court of the United States and shall become a judgment of the court, binding upon the parties.

Sixth. In the possible event that a dispute between a carrier and its employees is not settled under any of the foregoing methods, provision is made that the Board of Mediation, if in its judgment the dispute threatens to substantially interrupt interstate commerce, shall notify the President, who is thereupon authorized, in his discretion, to create a board to investigate and report to the President, within 30 days from the date of the creation of the board. It is also provided that after the creation of such a board and for 30 days after it has made its report to the President, no change, except by agreement, shall be made by the parties to the controversy in the conditions out of which the dispute arose.

At the White House on January 8 it was stated that so far as the provisions of the bill had been explained to the President he seemed to be in harmony with the principle of it. He was solicitous that it be so drawn as to afford adequate protection to the public interest and expected to see some representatives of manufacturing interests who had some representation to make on that point. In

his opinion the great fact is that the railroads and their employees have been able to reach an agreement, a fact which he considered most significant, as both sides had sat down with the understanding that if either should be able to force legislation not approved by the other there would be great difficulty in applying it, whereas a plan agreed to by both offered hope of success.

President Coolidge had forecast the agreement in his message to Congress on December 8 when he said he had been informed that the railroad managers and their employees had reached a substantial agreement on what legislation is necessary to "regulate and improve their relationship" and that "whenever they bring forward such proposals which seem sufficient also to protect the interests of the public, they should be enacted into law." In his message to Congress on December 3, 1924, President Coolidge had expressed the opinion that "it would be helpful if a plan could be adopted which, while retaining the practice of systematic collective bargaining with conciliation and voluntary arbitration of labor differences, could also provide simplicity in relations and more direct local responsibility of employees and managers," but that unless such legislation recognizes the principle that the public has the right to the uninterrupted service of transportation "it would be better to gain further experience with the present organization for dealing with these questions before undertaking a change."

Provisions of the Bill

Section 2 provides that "It shall be the duty of all carriers, their officers, agents and employees to exert every reasonable effort to make and maintain agreements concerning rates of pay, rules and working conditions, and to settle all disputes, whether arising out of the application of such agreements or otherwise, in order to avoid any interruption to commerce or to the operation of any carrier growing out of any dispute between the carrier and the employees thereof," and that "All disputes between a carrier and its employees shall be considered, and, if possible, decided, with all expedition, in conference between representatives designated and authorized so to confer, respectively, by the carriers and by the employees thereof interested in the dispute."

Disputes concerning changes in rates of pay, rules or working conditions would be dealt with as provided in section 6 and in other provisions of the bill relating thereto.

Boards of Adjustment; Grievances;

Interpretation of Agreements

Section 3 provides that boards of adjustment shall be created by agreement between any carrier or group of carriers, or the carriers as a whole, and its or their employees. The agreement would state the group or groups of employees covered by such adjustment board; provide that disputes growing out of grievances or out of the interpretation or application of agreements concerning rates of pay, rules or working conditions, shall be handled in the usual manner up to and including the chief operating officer of the carrier designated to handle such disputes; but, failing to reach an adjustment in this manner, that the dispute shall be referred to the designated adjustment board by the parties or by either party, with a full statement of the facts and all supporting data bearing upon the dispute.

The agreements would also provide that the parties may be heard either in person, by counsel, or by other representative, as they may respectively elect, and that adjustment boards shall hear and, if possible, decide promptly all disputes referred to them.

They would stipulate that decisions of adjustment boards shall be final and binding on both parties to the dispute, and it would be made the duty of both to abide by such decisions. They would also state the number of representatives of the employees and the number of representatives of the carrier or carriers on the adjustment board, which number of representatives, respectively, would be equal.

Board of Mediation

Section 4 provides for the Board of Mediation, composed of five members, appointed by the President, each to receive an annual salary of \$12,000. No person in the employment of or who is pecuniarily or otherwise interested in any organization of employees or any carrier, would be eligible and any member of the board might be removed by the President for inefficiency, neglect of duty, malfeasance in office, or ineligibility.

The principal office of the board would be in Washington, D. C.,

but it is provided that it may meet and exercise its powers at any other place and that in mediation proceedings one or more of its members may be designated by the board to represent it.

Functions of Board of Mediation

Section 5. The parties, or either party, to a dispute between an employee or group of employees and a carrier could invoke the services of the Board of Mediation, or the Board of Mediation could proffer its services, in any of the following cases:

(a) A dispute arising out of the grievances or out of the interpretation or application of agreements concerning rates of pay, rules or working conditions not adjusted by the parties in conference and not decided by the appropriate adjustment board;

(b) A dispute, not settled in conference between the parties, in respect to changes in rates of pay, rules or working conditions;

(c) Any other dispute not decided in conference between the parties.

In either event the board would be directed promptly to put itself in communication with the parties to such controversy, and to use its best efforts, by mediation, to bring them to agreement. If such efforts to bring about an amicable adjustment through mediation should be unsuccessful, the board would at once endeavor, as its final required action (except as provided in another paragraph of this section and in section 10), to induce the parties to submit their controversy to arbitration in accordance with the provisions of the bill.

In any case in which a controversy arises over the meaning or the application of any agreement reached through mediation under the provisions of the bill, either party to the said agreement, or both, could apply to the Board of Mediation for an interpretation as to the meaning or application of such agreement. The board would be required after a hearing of both sides to give its interpretation within 30 days.

On failure of the arbitrators named by the parties to agree on the remaining arbitrator or arbitrators within the time set by section 7, it would be the duty of the board to name such remaining arbitrator or arbitrators, naming only those whom the board shall deem wholly disinterested in the controversy to be arbitrated, and impartial and without bias as between the parties to such arbitration. Should, however, the board name an arbitrator or arbitrators not so disinterested and impartial, then, upon proper investigation and presentation of the facts, the board would be required promptly to remove such arbitrator and select another.

Either party to an arbitration desiring the reconvening of a board of arbitration to pass upon any controversy arising over the meaning or application of an award, could notify the Board of Mediation in writing, stating the question or questions to be submitted to such reconvened board. The board would then arrange for the reconvening of the board or a subcommittee and for hearings upon the matters in controversy to be submitted to it. No evidence other than that contained in the record filed with the original award could be received or considered by such reconvened board or subcommittee, except such evidence as necessary to illustrate the interpretations suggested by the parties.

The Interstate Commerce Commission, the Bureau of Labor Statistics, and the custodian of the records respectively of the Railroad Labor Board, of the mediators designated in the Erdman act, and of the Board of Mediation and Conciliation created by the Newlands act, would be authorized and directed to transfer to the Board of Mediation all papers and documents heretofore filed with or transferred to them, bearing upon disputes or upon mediation or arbitration proceedings held under the provisions of previous acts of Congress.

Arbitration

Section 7 provides that whenever a controversy is not settled either in conference between representatives of the parties or by the appropriate adjustment board or through mediation, in the manner provided in the preceding sections, such controversy may, by agreement of the parties to such controversy, be submitted to the arbitration of a board of three (or, if the parties to the controversy so stipulate, of six) persons. The failure or refusal of either party to submit a controversy to arbitration would not be construed as a violation of any legal obligation imposed upon such party by the terms of the bill or otherwise.

In the case of a board of three: The carrier or carriers and the representatives of the employees, would each name one arbitrator; the two arbitrators thus chosen would select a third arbitrator. If the arbitrators chosen by the parties should fail to name the third arbitrator within five days after their first meeting, the third arbitrator would be named by the Board of Mediation.

In the case of a board of six: The carrier or carriers, and the representatives of the employees, would each name two arbitrators; the four arbitrators thus chosen would select the remaining two arbitrators. If they should fail to do so within 15 days after their first meeting, the two arbitrators, or as many of them as have not been named, would be named by the Board of Mediation.

It is provided that no arbitrator, except those chosen by the

Board of Mediation, shall be incompetent to act as an arbitrator because of his interest in the controversy to be arbitrated, or because of his connection with or partiality to either of the parties to the arbitration.

Each member of any board of arbitration named by either party would be compensated by the party naming him. Arbitrators named by the arbitrators or Board of Mediation, would receive such compensation as may be fixed by the Board of Mediation, together with his traveling and other necessary expenses.

Section 8 provides that the agreement to arbitrate shall provide that the award shall be final and conclusive upon the parties as to the facts determined by the award and as to the merits of the controversy decided; that any difference arising as to the meaning, or the application of the provisions, of an award shall be referred back for a ruling to the same board, or, by agreement, to a subcommittee of such board; and that such ruling, when acknowledged in the same manner, and filed in the same district court clerk's office, as the original award, shall be a part of and shall have the same force and effect as such original award.

It is provided that nothing in the act shall be construed to require an individual employee to render labor or service without his consent, nor to make the quitting of his labor or service by an employee an illegal act; and that no court shall issue any process to compel the performance by an employee of such labor or service, without his consent.

Emergency Board

Section 10 provides that: "If a dispute between a carrier and its employees be not adjusted under the foregoing provisions of this act and should, in the judgment of the Board of Mediation, threaten substantially to interrupt interstate commerce to a degree such as to deprive any section of the country of essential transportation service, the Board of Mediation shall notify the President, who may thereupon, in his discretion, create a board to investigate and report respecting such dispute. Such board shall be composed of such number of persons as to the President may seem desirable; provided, however, that no member appointed shall be pecuniarily or otherwise interested in any organization of employees or any carrier. Such board shall be created separately in each instance and it shall investigate promptly the facts as to the dispute and make a report thereon to the President within thirty days from the date of its creation.

"The expense of such board, including the compensation of members, shall be paid out of the Treasury of the United States on itemized vouchers approved by the Chairman of the board.

"After the creation of such board and for thirty days after such board has made its report to the President, no change, except by agreement, shall be made by the parties to the controversy in the conditions out of which the dispute arose."

Section 12 appropriates for the fiscal year ending June 30, 1926, \$300,000, or so much thereof as may be necessary, to be expended upon the requisition of the Board of Mediation for the payment of its necessary and proper expenses.

Under section 13 all acts and parts of acts in conflict with the provisions of this act would be repealed; and particularly Title III of the Transportation Act, 1920, and the act approved July 15, 1913, providing for mediation, conciliation and arbitration.

Manufacturers Urge Stronger

Protection of Public Interest

Contending that the provisions of the bill need strengthening in several particulars in order adequately to protect the public interest, a delegation representing the National Association of Manufacturers and other organizations of manufacturers called on the President on January 11. They said it would be unfortunate if a proposal containing many constructive features were to be carried forward without an attempt to remedy these serious defects. The principal objection voiced was that the preservation of the status quo during the period of investigation by an emergency commission appointed by the President is too uncertain and it was also suggested that the powers of the Board of Mediation should be enlarged and authority given to summon books and witnesses necessary for investigation.

"The present language," said a statement given out by the delegation, "would not prevent the taking of a strike vote, the calling of a strike or lockout, or the taking effect of a strike called before the President began his investigation and timed to take effect during it. Whatever this provision is intended to mean, it is too vitally important to the public and to the parties to be left uncertain and

ambiguous. A final effect of the whole as drafted is to exclude the public from efficient representation in an adjustment of disputes which may threaten the imposition of heavy additional economic burdens, or the interruption of service by rail. It is in these aspects of the whole matter that the public has a vital interest. The President's power, primarily designed as a protection of the paramount public interest in uninterrupted transportation, is uncertain in that the bill does not give the executive ample authority to conduct such investigation. Further, though ostensibly they cannot, the provisions of the bill are uncertain as to whether the parties involved could engage in a strike or walkout pending completion of the President's investigation. The bill must be drawn to ensure the public against any suspension of transportation."

I. C. C. Nominees Quizzed by Senate Committee

WASHINGTON, D. C.

A UNANIMOUS report in favor of the confirmation by the Senate of the appointment of Richard V. Taylor, formerly vice-president and general manager of the Mobile & Ohio, as a member of the Interstate Commerce Commission to succeed Charles C. McChord, was voted by the Senate committee on interstate commerce on January 11 after about half an hour of questioning of Mr. Taylor by members of the committee regarding his views on railroad regulation. On January 13 the Senate also voted to confirm the appointment, in an executive session lasting only nine minutes in which a number of other nominations also were acted upon. The somewhat unusual practice of calling the President's nominees before the committee for examination was adopted in the case both of Mr. Taylor and of Thomas F. Woodlock, who is now serving on the commission under a recess appointment which runs to the end of this session of Congress but whose name the President has sent to the Senate for a regular appointment. Mr. Woodlock was called before the committee and questioned closely for two hours on January 9, principally by Senator Wheeler of Montana, who had expressed opposition to Mr. Woodlock in a speech in the Senate, on the ground of opinions expressed by Mr. Woodlock in his writings on railroad subjects. Senator Wheeler had before him an extensive file of articles written by Mr. Woodlock over a period of 25 to 30 years, on which he based his questions, and he also asked that Mr. Woodlock appear again for further questioning.

As to many of these early opinions Mr. Woodlock said that conditions had changed or that he had changed his opinions over the long period covered, but he explained rather explicitly his present views. The examination brought out that he had been editor of the Wall Street Journal, partner in a brokerage firm, an officer of the American International Corporation, an independent writer on financial subjects and a director of the St. Louis-San Francisco and the Pere Marquette. Mr. Woodlock explained that he regarded himself as a Cleveland Democrat but that he had recently registered as a Republican at Mt. Vernon, N. Y., because of local conditions and that he had voted for Calvin Coolidge in 1924, but that he had voted for Woodrow Wilson in 1912.

When Senator Wheeler asked whether he would allow railroads a fair return on a valuation of \$35,000,000,000 Mr. Woodlock said that under existing conditions such a thing was "unthinkable" and also that if the commission were compelled to place final values on railroads in such

a period as this, based on cost of reproduction, a value would be produced which the public would rightly reject and that the railroads could not get a fair return on such a valuation, because this is a period of "price storms." He believed that a case involving a valuation for recapture purposes would reach the Supreme Court before a valuation for rate purposes but that the value of the roads cannot be finally determined until the Supreme Court has stated the rule of value. Basing action on 1914 unit prices as the commission is now doing, he thought would produce a total about one or two billion dollars less than the railroad property investment accounts. When Senator Wheeler read from some testimony given by Mr. Woodlock before the United States Industrial Commission in 1901 in which he opposed rate-fixing by a commission, Mr. Woodlock said he had changed his views considerably since 1901. The Senator also quoted Mr. Woodlock as saying something to the effect that seven or eight banking houses controlled the railroads. Mr. Woodlock said that such a statement would not be true now, that there is today a scattered control; but that the commission really controls the railroads. As to consolidations Mr. Woodlock expressed the view that compulsory consolidation would not be feasible and that the benefit to accrue from consolidations has been exaggerated. He believed that systems might be so big as to be unwieldy. Other articles referred to dealt with such subjects as the Chicago & Alton reorganization, the Chicago, Milwaukee & St. Paul situation, the Adamson law and the McNary-Haugen farm relief bill, which Mr. Woodlock said "might be worse but not much worse." Senator Wheeler remarked that he had better not tell the farmers of the Northwest that he felt that way about it.

Mr. Woodlock again appeared before the committee on January 13 and Senator Wheeler resumed his questioning. Referring to a quotation from an article written early in 1924 in which Mr. Woodlock had spoken of the increased number of train employees required as a result of the passage of the Adamson eight-hour law, he said that the number of employees in 1924 was only 103,000 greater than in 1914. Mr. Woodlock said he was referring not only to the effect of the Adamson law but also to other changes in rules and working conditions, and that the effect was shown more in some years prior to 1924. Senator Fess asked Senator Wheeler for the figures for 1920 but he did not have them at hand. When the Senator read from a memorandum that Mr. Woodlock had written that labor owed all improvements in its condition to capital, Mr. Woodlock said that he would like to see the context of the article, as he held no such opinion.

In another article written early in 1924 Mr. Woodlock had referred to the lack of confidence of investors in fair treatment of the railroads and had predicted the possibility of "something like an old-fashioned speculation in rails" if Coolidge should be elected. Senator Wheeler asked if that were meant to encourage Wall Street speculators and why Mr. Woodlock thought the railroads had not been treated fairly. The witness replied that he thought no one had written more than he had against stock speculation and that if Senator Wheeler had read many of his articles without finding that out he had failed in the use of words. As to the treatment of the railroads he said that he had meant at no time yet has any of the railroad groups, with the possible exception of the Southern, earned the statutory rate of return of $5\frac{3}{4}$ per cent.

When Senator Wheeler referred to his previous statement as to having changed his views in some particulars Mr. Woodlock said that he had not changed his view as to the tariff and currency questions since he had first studied

them but that he had begun the study of railroad questions later and that the man who has not changed his views on railroad questions in the last 20 years has not done any thinking on that subject in that time.

When the question of valuation was again brought up Mr. Woodlock repeated his statement that this is no time to push to a conclusion the question of the final value of the railroads, because, with prices as high as they now are the result arrived at would not be practical, but he said that if he were on the division of the commission which handles valuation matters he could only follow the directions laid down by the law. When he said he did not believe that an element should be added to value for going concern value or development cost unless it represented an actual outlay of capital Senator Wheeler asked if he had not expressed approval of the decision of the New Jersey public utilities commission's decision in the Passaic gas case in which the commission had added 17 per cent for going value. Mr. Woodlock said he had expressed approval of a particular feature of the decision of the court which had upheld the commission's decision in that case. Senator Wheeler took up most of the time of the session reading from a speech made by Senator Cummins in 1917 opposing the confirmation of Winthrop M. Daniels for reappointment to the Interstate Commerce Commission on the ground of his decision in that case while a member of the New Jersey commission. Senator Wheeler said that Senator Cummins had showed that if 17 per cent were to be added to railroad valuations for going value it would mean a large increase in rates. Senator Howell remarked that most of the public utilities commissions are allowing something for going value without any evidence that there was any cost to the company and Mr. Woodlock said he thought that was not right. When Chairman Watson asked if the examination of Mr. Woodlock might not be brought to a conclusion in view of the many other matters before the committee, Senator Wheeler replied that the committee has no more important question before it and it was decided that Mr. Woodlock should appear again on January 14.

Senator Wheeler asked Mr. Taylor whether he had not expressed his views as to railroad consolidation in correspondence with Senator Underwood. He said he had and that he had also testified to the same effect before the Interstate Commerce Commission at the consolidation hearings, because the commission had allocated the Mobile & Ohio to the Southern system and that he had taken the position, as commissioner of the city of Mobile, that any grouping of the railroads that would give a preference to the ports of one state over those of another was contrary to the Constitution and the Transportation Act. He said he thought the plan would hurt Mobile and that Professor Ripley had drawn attention to the fact that the Mobile & Ohio might better be consolidated with some other road than the Southern. In reply to other questions he said he had had no railroad connection since he left the Railroad Administration and that he held no railroad stock. Asked whether he was under a pension or retirement pay he said he had been "kicked out without a dollar" after 42 years of railroad service and that he was a poor man; that he had served under the Railroad Administration and that afterward, although everybody under him had his place awaiting him, his was not.

Senator Pittman asked about Mobile's water transportation service and asked if Mr. Taylor felt the Panama canal ought to be abandoned. He replied in the negative. Senator Dill asked whether he had any agreement with the President to do certain things so that if he failed to do them his resignation might be requested. Mr. Taylor said he had absolutely no agreements with anybody and that he understood that the commission was an indepen-

dent body like a court and not a department under the President. Asked by Senator Wheeler as to his ideas regarding the purpose for which the commission was created Mr. Taylor said he thought its creation was necessary and exceedingly wise. When the Senator asked whether he believed the purpose was to protect the shippers of the country he replied: "Absolutely, and also to protect the railroads against themselves."

Asked whether he believed in basing rates on "prudent investment" or on cost of reproduction, Mr. Taylor said he would not dare answer. He doubted if rates could be made according to any formula, saying that the facts in each case must be considered, and that volume and length of haul are important factors in determining what a rate should be. "You write the laws," he said, "and every question that came before me, if I should be placed upon the commission, I would do my best according to my intelligence to decide according to the law and the facts in each case. I couldn't say what my position would be in any particular case." He added that he had been dealing all his life with railroad questions of the kind that come before the commission.

When Chairman Watson asked Mr. Taylor if his hearing was such that he thought he could hear arguments from the bench Mr. Taylor said he had told President Coolidge that he was a little deaf but that he thought there would be no trouble on that score. He said he could hear pretty well but that he wore a "hearing machine" because he had observed that "everything worth while is likely to be said low." The committee at once went into executive session and Mr. Taylor had hardly got outside the door of the committee room when Senator Underwood came out and said that the committee had voted unanimously for confirmation.

Earlier in the day the committee had voted in favor of the principle of the bill introduced by Senator Smith of South Carolina to provide for regional appointments to the Interstate Commerce Commission, and a sub-committee was appointed to draft a bill. Senator Smith's bill had provided for dividing the country into four districts but had omitted several states from any district.

Consideration was also given to Senator Howell's bill to take away the power of the Interstate Commerce Commission to prescribe minimum rates and at another meeting on January 12 the committee assigned various bills to sub-committees.

Hearings on Senator Cummins' consolidation bill were to be held before the committee beginning on January 11

but were postponed because Senator Cummins, who had planned to make an opening statement, was absent because of a slight illness. Alfred P. Thom, general counsel of the Association of Railway Executives, who was present, together with several railroad counsel, was asked if he cared to begin his statement but said that he would prefer to wait so that Senator Cummins could hear what he had to say. Chairman Watson said he had received no communication from any one as an opponent of the bill. An adjournment was taken and it was finally decided to postpone the consolidation hearings until January 21 and to hold hearings on the new railroad labor bill on January 14.

Standard Voucher Checks Proposed

WITH the purpose in mind of eliminating inconveniences resulting from the multiplicity of designs of voucher checks, a committee of railway accounting and treasury department officers has proposed two standard designs of voucher checks, which it is contemplated to put into general use. The committee acted with a larger committee appointed at a national conference of representative interests called by the Division of Simplified Practice of the Department of Commerce held in Washington on December 4, 1925. The larger committee was appointed to prepare standard forms and was to confer with the clearing house section of the American Bankers Association and the Federal Reserve Board.

The committee of railroad accounting and treasury officers, consisting of 10 members, met in New York on December 17, and has designed three standard forms; first, a single voucher check, size 3 $\frac{3}{8}$ in. by 8 $\frac{3}{8}$ in.; second, a fold over voucher check, size 6 $\frac{3}{4}$ in. by 8 $\frac{3}{8}$ in. open, and 3 $\frac{3}{8}$ in. by 8 $\frac{3}{8}$ in. folded, and third, a standard draft for railroad use. It also recommended the use of a standard window envelope for the purpose of mailing the newly designed voucher check.

The new single voucher check is shown herewith. The fold over voucher check is the same as the single voucher check in so far as relates to the negotiable part or face. Space for the endorsement appears on the upper part of the check when open so that when the check is folded the

Name of issuing company here		AUDIT NO. _____	
This space will accommodate six lines of this style of typewriting (pica) as indicated to the left.		Dept. No. _____ Mo. _____	
		DATE OF VO. _____	
		APPROVED _____	
		APPROVED _____	
IN SETTLEMENT OF THE ABOVE ACCOUNT		AUDITED _____	
PAY TO THE ORDER OF	Space for name and address of payee is 1 $\frac{1}{4}$ " X 5" to agree with standard window opening.	City where issued and date in this space.	
The amount of voucher is to be written in here		Dollars \$ _____	
This space reserved for name of bank		Signature _____	
		TITLE _____	

Standard Form of Voucher Check

endorsement space is on the back, as in the case of the single voucher check. This means that the detail is on the inside of the check when folded.

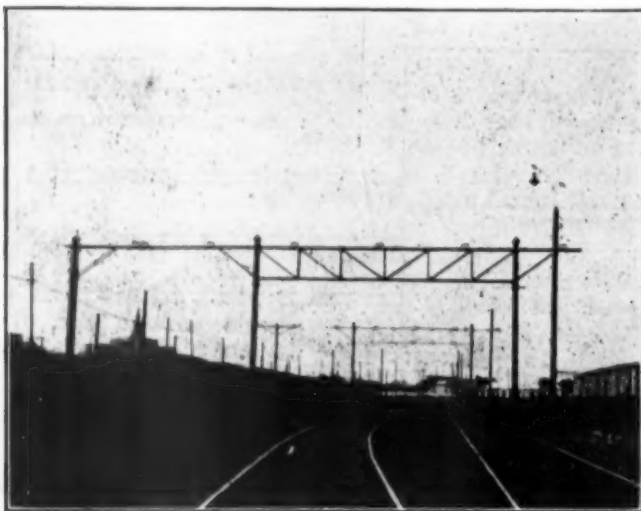
On the endorsement side the words "Endorse Here" appear, as indicating the place for endorsements but not necessarily indicating the wording to appear in that space when prepared for actual use.

This fold over voucher is to be used only when the space provided on the single voucher check form is insufficient to carry all the necessary information. It is the experience of many large companies that substantially all payments are adequately taken care of by the single form voucher check $3\frac{3}{8}$ in. by $8\frac{3}{8}$ in., and that only a negligible percentage of payments require the single-fold voucher check $6\frac{3}{4}$ in. by $8\frac{3}{8}$ in. The inside of the form is to be restricted to stating the detail of account covered by voucher check; the ruling and printing to appear on that side of voucher is left to the discretion of companies using such forms.

The committee also agreed that the endorsement of the payee in the usual form should be the only receipt required on voucher checks.

The committee of railroad men consisted of J. G. Austin, general auditor disbursements, Erie, also Railway Accounting Officers Association; R. E. Connolly, treasurer, Illinois Central, also Railway Treasury Officers Association; W. W. Cox, assistant to comptroller, Delaware & Hudson; F. A. Deverell, assistant comptroller, Baltimore & Ohio, also Railway Accounting Officers Association; R. N. Harry, assistant general treasurer, New York Central Lines, also Railway Treasury Officers Association; G. H. Howe, assistant cashier, New York Central Railroad, secretary of the committee; H. G. Lochmuller, assistant auditor disbursements, New York Central Railroad, also chairman, New York Central Lines Disbursement Committees; E. L. Rossiter, treasurer, New York Central Railroad, also chairman, Committee on Treasury Department Forms, Railway Treasury Officers Association; J. G. Stidger, treasurer, Wheeling & Lake Erie, also Railway Treasury Officers Association; E. R. Woodson, secretary, Railway Accounting Officers Association, presiding.

It is believed that the use of standard voucher checks will be of great assistance in the handling of checks, and will eliminate many inconveniences which now exist with the present multiplicity of forms and sizes.



Buenos Aires Western Electrified Line at Port of Buenos Aires

Freight Car Loading

WASHINGTON, D. C.

FREIGHT car loading for the week ended January 2, which included the New Year's day holiday, amounted to 741,239 cars, a decrease of 25,859 cars as compared with the corresponding week of the year before but an increase of 34,947 cars as compared with 1924. The Pocahontas district was the only one to show an increase as compared with last year but there was small increases in the loading of coke, merchandise and miscellaneous freight, while other classes of commodities showed reductions. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING—WEEK ENDED JANUARY 2, 1926

Districts	1926	1925	1924
Eastern	167,975	176,254	171,163
Allegheny	150,304	151,422	148,495
Pocahontas	44,350	41,142	33,380
Southern	117,669	121,481	112,075
Northwestern	82,668	91,435	78,362
Central Western	122,634	125,905	112,038
Southwestern	55,639	59,549	50,779
Total Western	260,941	276,799	241,179
Commodities			
Grain and grain products	37,940	40,907	32,014
Livestock	28,859	34,667	31,760
Coal	158,994	181,604	159,511
Coke	16,897	13,505	11,091
Forest products	43,919	47,987	47,929
Ore	7,992	8,267	8,133
Misc., L. C. L.	194,173	192,724	184,381
Miscellaneous	252,465	247,437	231,473
Total	741,239	767,098	706,292
December 26		701,079	647,324
December 19		987,886	900,654
December 12		1,008,824	957,424
December 5		1,020,873	969,485

The freight car surplus for the week ended December 31 amounted to 267,739 cars, an increase of 81,454 cars as compared with the week before. This included 95,295 coal cars and 127,157 box cars. The Canadian roads for the same week had a surplus of 14,160 cars, including 10,225 box cars and 400 coal cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended January 2 totalled 43,559 cars, the lowest weekly figure in the year, although the decline was seasonal and attributable to the holidays. Compared with the same week last year the loadings were heavier by 3,308 cars, grain loading being heavier by 3,671 cars and miscellaneous freight by 1,346 cars.

Commodities	Total for Canada			Cumulative totals to date	
	Jan. 2, 1926	Dec. 26, 1925	Jan. 3, 1925	1926	1925
Grain and grain products	7,940	9,339	4,269	514,570	487,865
Live stock	1,405	1,101	2,041	128,681	127,650
Coal	5,031	5,417	7,281	247,676	297,820
Coke	387	396	266	16,754	12,814
Lumber	2,015	2,483	1,988	183,719	185,772
Pulpwood	2,350	1,974	2,000	130,044	126,219
Pulp and paper	2,168	2,094	1,593	109,681	103,790
Other forest products	1,806	2,035	1,695	146,685	132,172
Ore	1,308	1,385	1,057	75,243	65,817
Merchandise, L. C. L.	10,742	11,888	11,000	804,575	766,589
Miscellaneous	8,407	8,520	7,061	676,055	631,755
Total cars loaded	43,559	46,632	40,251	3,033,683	2,938,272
Total cars received from connections	26,543	30,462	26,596	1,754,925	1,657,893

THE FOREMEN'S SAFETY SCHOOL of the Milwaukee Association of Commerce has opened its sixth annual term with about 5,000 members registered. In the four months beginning with December 16 and ending next April, 46 meetings are to be held. About 50 volunteer speakers aid in the conduct of the school, which consists largely of lectures. These gatherings are described as miniature safety congresses. The need of such a school is indicated by the fact that in 1924 employers in the state of Wisconsin paid out for indemnities, under the workmen's compensation act, \$4,200,479, the personal injuries reported in that time, fatal and nonfatal, being 22,766.

Economical Locomotive Mileage Between General Repairs

Method of analysis shows when increasing cost of running repairs calls for heavy shop work

By Lawrence Richardson

Contracting Engineer, Dwight P. Robinson & Company, Inc.

WHAT is the most economical mileage between classified repairs? This is probably the most frequent question in motive power operation. It sometimes appears in the form of a query as to the proper percentage division between classified and running repairs, the lower mileage calling for a greater percentage of work in the back shop.

Efforts to find an answer have, in general, followed

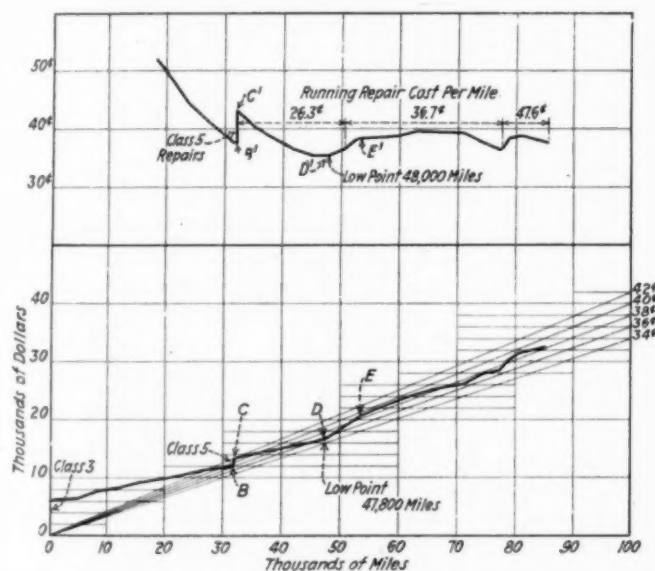


Fig. 1—Curve of Accumulating Locomotive Maintenance Expense, Starting with a \$6,000 General Repair

two lines. One deals with general averages while the other deals with individual records of mileage and cost. A general average is by its nature not specific. There is a wide variation between different types of locomotives. In usual operation, for instance, there is a spread of from 50 per cent to 100 per cent between assigned mileages of different classes. In grouping costs, it is probable that some of them are not the most economical. This probability always leaves a doubt as to the final conclusiveness of the grouped costs.

On the other hand, individual costs can be satisfactorily analyzed and the reasons for abnormal costs quickly determined. By obtaining enough individual costs, it is possible to strike an average that is conclusive. Such separate averages should be obtained for each class of power.

Past methods have been governed largely by opinion. In other instances, it has been a case of "cut and try." A thorough search has failed to disclose the publication of any information showing the determination of the most economical method with a satisfactory degree of exactness. A recently published paper compared the economics of a

short mileage between general repairs with a long mileage, but no data was available covering medium mileages. A consideration of extremes is not sufficient because it leaves undetermined just where the most economical point is located in the range between the extremes.

When certain operations, as shown by general averages, fail to show a satisfactory improvement, it is invariably the practice to resort to an analysis of individual performances of costs in order to get desired results. In fairness, it must be said that on the best managed roads the policies set by this method check closely with the policies indicated by this study.

In making a determination of the economical mileage between classified repairs as outlined in this paper, it is necessary to have individual costs and mileage available. The proposed method is primarily a quick way of analyzing these costs with a minimum amount of effort. The actual individual cost and mileage records of several locomotives have been taken to illustrate the application of the method. The costs are plotted against mileage. Starting with zero mileage and the cost of a general repair in Fig. 1, the curve is drawn by adding the mileage and the repair expense as they accumulate each month. It is essentially a curve of total expense against total mileage. At point *B* the locomotive was given a Class 5

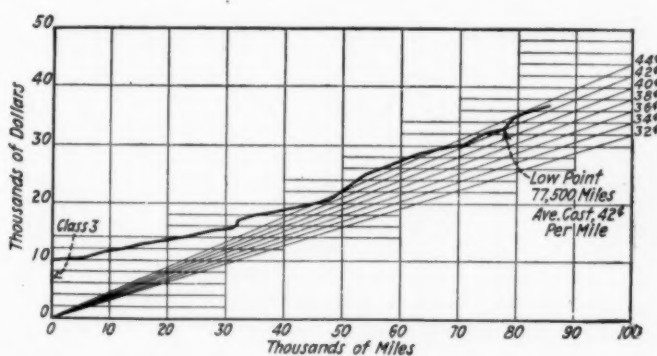


Fig. 2—Illustrating the Effect on Economical Mileage Between Shoppings of Larger Classified Repair Costs

repair which raised the expense to point *C* without increasing the mileage. The curve is continued on until the locomotive is shopped for general repairs.

To facilitate analysis, the average cost-per-mile lines are plotted radially from the origin. The 32-cent line passes through a 100-mile and a \$32 point, a 10,000-mile and a \$3,200 point, and so on, and it will be seen that these points lie on a straight line. Since the origin is one point on the line, it is only necessary to determine one other point to draw the line. By plotting enough of these average cost-per-mile lines, the average cost at any particular point can be quickly read.

It is sometimes difficult to read costs with diverging

cost lines, so an upper curve in Fig. 1, showing the average cost per mile, was plotted on rectangular ordinates. It will be noted that the average costs as shown at points B^1 , C^1 , etc., are the same as at B , C , etc., in the lower curve.

With a total average cost dropping as shown between points C and D the question would naturally arise as to what would happen if the economical point were "over-run." The answer is the sharp upturn in the curve from point D to point E . Point D is the point where the condition of the rods, boxes or tires is such as to demand heavy repairs; more than the average run but not heavy enough to be a classified repair.

The curve in Fig. 2 shows the effect of an increase in the cost of the initial, or general repair. The curve in Fig. 1 started with a \$6,000 general repair. The curve in Fig. 2 is identical except that it starts with a \$10,000 general repair. The low point in this case comes at 77,500 miles instead of 47,800. This is to be expected, as in general, the more it costs to make a general repair, the more the mileage necessary to pay for it. This emphasizes the double value of economical means of making general repairs. The first value is the direct value; the second value is the reduced mileage requirement, lowering running repair costs and giving a better average condition of power.

The curve in Fig. 3 covers a case where the locomotive should have been given a general repair after the second Class 5 repair instead of after the third Class 5 repair.

The curve shown in Fig. 4 is a striking illustration of what happens when an excessive mileage is run. This particular locomotive ran 199,000 miles before receiving

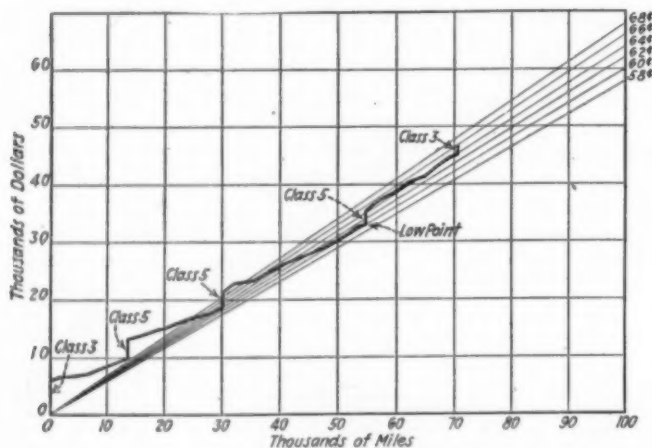


Fig. 3—The Lowest Maintenance Cost Per Mile Run in the Case of This Locomotive Called for a General Repair After About 54,000 Miles

a general repair. The economical limit was reached at 62,000 miles, when the average cost per mile was 34 cents. At 100,000 miles, the average cost was 36 cents. The curve from 62,000 to 100,000 miles shows the effect of an "overrun." This mileage was obtained by engine house repairs with their attendant high cost. The next low point after the Class 4 repair was 38 cents, which was reached at 123,000 miles. At 160,000 miles the cost per mile had increased to 41 cents. Had three general repairs been given instead of one, the cost might not have exceeded 34 cents with a total saving of \$14,000. This in itself would have been a more than 100 per cent return on the cost of the two additional general repairs.

It will be noted that the curves and discussion only concern the actual cost of repairs. In addition, there are certain so-called intangibles which can be evaluated for

individual cases. They all increase on the average as the mileage increases. Some of them are the cost of engine failures, the added fuel cost as the boiler scale increases and the loss of power and efficiency due to wear. While they were omitted to avoid complication, they should be considered in any thorough study.

The question of economical mileages and the division of expenditures between the back shop and roundhouse will be covered in future articles. This article covers only the proposed method of analysis. Individual costs, in themselves, do not show the whole picture, but where available,

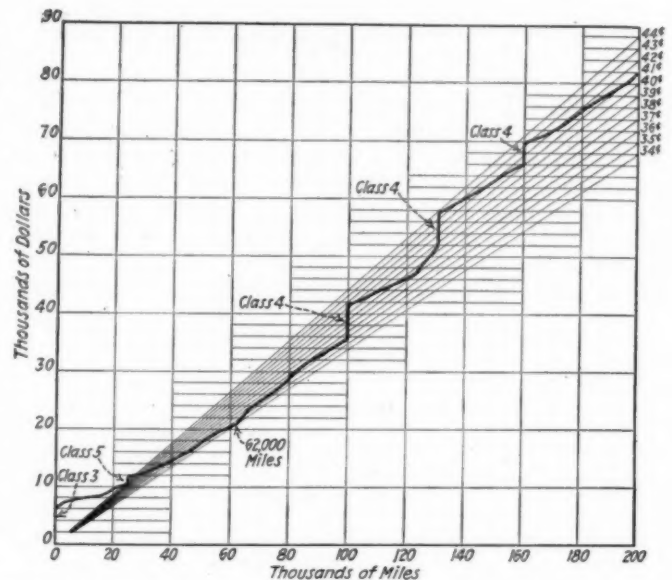


Fig. 4—How Excessive Mileage Between General Repairs Tends to Increase the Maintenance Cost per Mile

they should be plotted as outlined. In the correct analysis of individual cases lies the possibilities of economical operation of the power as a whole.

The writer is indebted to R. A. Philip of Dwight P. Robinson & Company, Inc., for the suggested use of the radial cost-per-mile lines.



A Station on the Buenos Aires Southern

Bus and Truck Operation Should Be Co-ordinated

Motor vehicle problem is one of finding economic field for each rather than of competition

As far as the railroads are concerned, the motor vehicle problem is one of co-ordination rather than one of competition, according to an address made by C. H. Markham, president of the Illinois Central, before the twenty-third annual convention and road show of the American Road Builders' Association held in Chicago on January 12. Frank H. Alfred, president of the Pere Marquette also spoke on the co-ordination of steam railway and motor vehicle transportation. T. R. Dahl, vice-president of the White Motor Truck Company, Cleveland, Ohio, spoke upon the relation or correlation of various transportation agencies.

C. H. Markham Discusses Highway Transportation Problems

An abstract of Mr. Markham's address follows:

Highway transportation has created problems as well as benefits. Each form of transportation has its individual characteristics. Our national transportation program should take these characteristics into account and assign each form of transportation to that field in which it can reach its maximum efficiency and be of greatest use in the public service. Unless that is done, there is certain to be wasteful conflict. Therefore, I think it is important that we determine clearly the field to which highway transportation ought to be assigned in our program for the continued development of transportation as a whole.

As far as railroads and motor vehicles are concerned, it seems to me that the problem is one of co-ordination rather than one of competition. In some instances motor vehicles operated over good roads are capable of furnishing transportation to better advantage than railroads, and in those instances the railroads must in time give way. On the other hand, there are certain transportation services that can be furnished to better advantage by railroads, and in those services the railroads must dominate. Economic law is inexorable; in the end, that means of transportation will prevail which is best suited to perform the service required. However, the interest of the public in good transportation now and at all times makes it advisable that we anticipate the effect of economic law and so curtail the period of uneconomical and possibly injurious experiment.

The development of highway transportation has already had a tremendous effect on railway passenger transportation. In the last five years there has been a steady decline in the total number of passengers carried by the railroads. Long-distance travel and commutation travel on the railroads have been increasing; hence all the loss has come about in travel between nearby points. This loss has been due almost altogether to the increasing use of automobiles on good roads.

No system of public transportation, in my opinion, can successfully compete for this business with the private passenger automobile. It is too much to expect a man with an automobile at his doorstep to go to a station, wait

for a train, pay a fare, stop at places he has no interest in and adjust his movements generally to a train schedule when he has the alternative of good roads to travel on, every liberty as to time of departure and return, a motor-ing expense that seems negligible to him and a vehicle for his use when he arrives at his destination. It is not a question of cost. It can be demonstrated that the cost per mile is much greater for automobile travel than for train travel, when depreciation and interest on investment are figured in. But who can sway the average American by arguing for economy as against convenience?

The increased use of private automobiles over good roads has made it unprofitable for the railroads to operate many of their local passenger trains. In some sections local passenger train service already has been considerably curtailed. More local passenger trains will have to come off from time to time. The discontinuance of these trains means some hardship, even as little used as they have come to be. Local express and mail service is inconvenienced, and the trains are missed in bad weather. The public must take these inconveniences into account in making its decision as to whether it needs local passenger train service strongly enough to make such business profitable to the railroads. If it doesn't, the railroads have no alternative but to quit running the trains.

How to Meet Competition

It has been suggested that the railroads ought to meet the problem of the reduced earnings of their local passenger trains by either substituting self-propelled railway cars for the trains or by operating motor buses on parallel highways.

As to the latter suggestion, it seems to me that where there is not enough business for one form of public transportation to live on there certainly is not enough to justify two. Motor bus operation by the railroad would add to the total expense of equipment owned and used, while the amount of traffic that might be won back in this way is doubtful. The private automobile, good roads and human nature are an unbeatable combination in deciding the nature of travel between nearby points. My own view is that the field for motor bus operation by railroads is exceedingly limited and that such a field as does exist is principally that of supplementing rather than supplanting existing train service.

As to the suggestion that self-propelled railway cars be substituted for local passenger trains, that has been and is being done to some extent. Such substitution reduces the direct expense of train operation. But it increases traffic little, if any, and on many runs there isn't enough traffic left now to pay the expense of operating a self-propelled car, and what little is left is fast disappearing with the spreading use of automobiles and the development of good roads. I believe the railroads are not justified in going into the operation of self-propelled cars on any extensive scale where they face the prospect that in a few years they may have a considerable investment tied up in equipment for which there is no further use.

I have already mentioned the fact that commutation

travel in the region of the large cities is increasing. Automobile travel in the cities is comparatively slow because of traffic congestion and the great number of street crossings. Moreover, it is becoming increasingly difficult to find suitable parking space near the office and shopping districts of the large cities. Therefore, I look for the steam and electric railroads to continue to dominate this field of transportation service by reason of the greater speed which their facilities permit. The railroads can specialize in the development of a service to meet the opportunities existing under these conditions.

Another field of passenger transportation in which the railroads are now and will continue, I believe, to be supreme is that of long-distance travel. The motor bus and the private automobile are both at a great disadvantage for that type of transportation because they cannot provide in their limited quarters the comfort and luxury provided by the railroads for long journeys. On long trips buses have difficulty in adhering to exact schedules, due to adverse highway and weather conditions. The railroads without doubt will continue to be the principal carriers of persons for long distances.

For freight transportation there has been considerable development in the use of motor vehicles over good roads. In some respects that development has conflicted with the service performed by the railroads, but in other respects it has aided railway service. Take the increased haulage by truck between farms and shipping points and between distant points where railway facilities are not available. There the use of motor trucks has opened up new areas for increased production and consumption and has added to railway traffic. There has also been a development of freight transportation by motor vehicles within railway terminal districts, in radial operations from large centers of population and in short hauls between populous centers where door-to-door delivery is an important factor. In these respects there has been a conflict with railway service, but the loss of business by the railroads has not been without its advantage to the railroads themselves.

That is true because package freight, especially on short hauls, is costly for the railroads to handle. The less-than-carload freight originating on the Illinois Central System ordinarily uses about 27 per cent of all cars loaded and furnishes only about 6 per cent of the tonnage originated. On the other hand, freight moving in carloads, such as coal, lumber, grain, stone, sand, gravel and so on, comprises the bulk of our tonnage and can be handled at comparatively less expense. It is usually more profitable for the railroads to handle carload freight at rates below the average than to handle package freight which takes rates above the average.

On long-haul freight traffic the motor truck cannot compete with the railroad. One reason is the greater cost of operation. The average freight train carries a load of around 750 tons. It would take 150 trucks, each hauling five tons (which is the maximum load allowed on public highways in many sections of the country), to do the work of one average freight train, and many freight trains haul much more than 750 tons. It is obvious that the labor cost of moving such a fleet of trucks as would be required to do the work of one freight train would be prohibitive as compared with the labor cost of a train.

In terminal areas, where the handling of freight is ordinarily least profitable to the railroads, and for short-haul trips, where drayage and handling costs constitute an appreciable part of the total transportation expense on shipments by rail, motor trucks and good roads are suitable for even further development. Expedited service from door to door gives the trucks an advantage over the railroads in both speed and cost. This field of service is a large one, and I look for the use of motor vehicles in this field to develop still further.

In considering the effect of the development of highway transportation on the railroads, we should keep in mind the fact that the railroads handle an enormous volume of freight traffic as a direct result of the development of highway transportation. There are approximately three million miles of highway in this country, of which about half a million miles are hard surfaced. Practically all the road-making machinery and supplies and all the materials for improving these roads—sand, gravel, cement and so on—are transported by the railroads.

Importance of Automobile Traffic

Then there is the automobile industry itself, which ranks first among all the manufacturing industries in this country. This industry last year consumed 11 per cent of the iron and steel, 50 per cent of the plate glass, 65 per cent of the upholstery leather and 84 per cent of the rubber that was consumed in this country. Motor vehicles last year used 7,494,000,000 gal. of gasoline, and the manufacture of tires used 769,000,000 lb. of crude rubber and 226,000,000 lb. of cotton fabric. The motor vehicles produced in this country last year had a wholesale value of \$3,000,000,000, and the parts and accessories produced, exclusive of tires, had a wholesale value of \$1,000,000,000. It is estimated that 3,200,000 persons are employed in the production, distribution and maintenance of motor vehicles and in the allied industries. This great industry is, of course, an important patron of railway freight transportation.

Among the principal patrons of the Illinois Central System are concerns engaged in handling road-building materials and machinery and in the production and distribution of motor vehicles, accessories, gasoline and so on. It may surprise some of you to know that, according to our best estimate, the freight revenue received by our railroad from handling the various products connected with motor vehicles and good roads is more than one-eighth of our total freight revenue. Of course the proportion will vary with respect to different railroads, but I have no doubt that this traffic provides the railroads generally with a substantial part of their total freight revenue.

There is no way to determine exactly the loss in revenue sustained by the railroads as a result of motor vehicle competition. This loss is partly offset by the gain in revenue caused by the use of motor vehicles to extend the areas that enjoy convenient access to railway facilities. However, even if the disparity between this loss and this gain is large, I am fully convinced that when we take into consideration the extensive traffic derived by the railroads from the transportation of road-building materials and machinery, automobiles, gasoline and various allied products we can feel that the railroads have gained more than they have lost through the development of highway transportation.

There are factors of uncertainty in the future of the motor vehicle as a commercial carrier. For example, thus far the operation of motor vehicles as common carriers has not been subject to exacting regulation. It is not unlikely that further increase in the number of motor vehicle common carriers will result in more stringent regulation, and it remains to be seen how they will fare under those conditions.

Another factor that may conceivably affect the future of highway transportation is the road space available. There are now more than 40 motor vehicles in use for every mile of hard-surfaced road in the United States. The rapidly increasing use of these vehicles is bringing about a condition of road congestion, especially in the territory adjacent to populous centers, that may restrict further development of highway transportation in much the same way that conditions of dense traffic have tended to

restrict the use of motor vehicles in the larger cities.

I invite your attention to the great need for the development of highways that will extend rather than duplicate the transportation routes already provided by the railroads. The highways that have been built in this country to date have for the most part been built along existing channels of commerce rather than with a view to opening up new channels. The result is that virtually every important line of railroad in the country is paralleled by hard-surfaced highways. It is too late to raise an objection to that phase of highway development. But since that need has now been fairly well supplied, we ought to turn our attention to the development of lateral lines to feed these highways and to feed the railroads operated along the same routes.

Another development that may well be sponsored by the roadbuilders is the increased construction of comparatively short stretches of heavy-duty, hard-surfaced roads designed and designated primarily for the use of motor trucks. These roads should, of course, be constructed only where commercial and other conditions are favorable to the use of these trucks in transporting goods for short distances and where the saving in handling costs as compared with rail transportation is sufficiently large to justify the extensive expenditures necessary to provide this kind of highway. Such highways should also, needless to say, be paid for largely or entirely by those who use them.

Frank H. Alfred Urges Co-ordination

Mr. Alfred spoke in part as follows:

The railroads can scarcely expect to retrieve the passenger traffic lost on account of the use of privately owned automobiles; nor can they hope to compete with buses in the field of short hauls and frequent service, as the large investment and high cost of operation required for railroads to give as frequent service as the buses makes it out of the question. On longer hauls, the railroads offer more comfort, greater safety and dispatch. In addition, they handle passengers' baggage free of charge, a fact too often lost sight of in comparing the service rendered.

Freight competition is practically restricted to less than carload freight having a comparatively short haul. To the casual observer this might appear to be an important part of a railroad's traffic, as it is conspicuous and he sees but little of the tremendous volume which moves in carload lots. As a matter of fact, the tons of less than carload freight handled on the Pere Marquette in 1924 was less than 2½ per cent of the total. A large share of this 2½ per cent had a long haul not suited to highway transportation, so that probably the freight traffic which is actually competitive amounts to not more than 1 per cent. Further, this is probably the least profitable portion of the railroads, freight traffic as the expense of handling it is so high, including as it does the use of facilities in central locations where the property has an extremely high value.

The railroads cannot reasonably object to any loss of traffic to highways, waterways or other form of transportation, where such transportation is more economical than that afforded by the railroads. The railroads may object, with reason however, if competing transportation facilities are aided either by direct subsidy, by being granted free use of public improvements, by being relieved of taxation, or by being relieved of regulatory restrictions which must be borne by the railroads. As matters now stand, the railroads are regulated as to rates which they may charge, as to their dealings with their employees and the public, and in many other ways. They are heavily taxed, and a considerable share of the taxes which they pay is expended in highway improvement.

Commercial highway transportation, both passenger and freight, is not subject to regulation. Further, the right of way and roadbed is provided and maintained by the public, and it pays taxes only on the same basis as other users of the highway. Without raising here the question as to whether or not such virtual subsidy of commercial highway transport is the best public policy, it may be stated that from a railroad man's point of view it does not seem quite fair, especially when the relative value of the service rendered the community by the two forms of transportation is taken into account.

The absence of supervision of highway transport by a regulatory body is to be deplored. Irresponsible parties enter the business and operate for a time at less than cost, to their own ultimate financial ruin, and to the detriment of legitimate carriers. In such cases, the passenger or shipper has small chance of collecting damages in case of loss or personal injury. These features are not in the public interest, and no doubt will be corrected in the course of time.

There is little doubt that the public would be best served by a system of transportation which included under one management, railway and highway transportation—in other words, by the absorption by the railroads of the companies engaged in commercial transportation on the highways. At the present time such an arrangement does not appear generally feasible, however, on account of various obstacles, legal and otherwise. Under present circumstances, the most satisfactory results can be obtained by co-operation between the two forms of transportation to the fullest extent possible, each profiting by the other's experience, and aiding, so far as it may without injury to itself, the other's development in the field to which it is best adapted. The present trend seems to be in this direction.

I offer no definite program of co-ordination under present conditions. The important thing at this time is for those engaged in railroad and in highway transportation to realize that their legitimate and profitable fields do not overlap to any considerable extent, and that each has more to gain by working in co-operation with the other than by opposing him. This spirit will lead to co-operation, and perhaps ultimately to combination.

But co-operation must be based on an equitable distribution of burden, responsibility and reward. The railroads must learn to give up, with good grace, that part of their business which can be handled with more economy on the highways. On the other hand, those engaged in commercial transportation on the highways must not object to paying a just and fair amount to the public for their use. Such use requires a more expensive highway than would otherwise be needed, and in general the taxes paid on commercial vehicles are not commensurate either with the cost and inconvenience of such use to the public or its value to the user. Neither must they object to being subjected to such regulation and restriction as may prove to be in the interest of the public. The railways must maintain their independence, and in doing so, acknowledge their interdependence.

A promising field for co-operation of railroad and motor truck transportation is the handling of less than carload business in large cities. The delivery of such freight by railroad to an outlying freight house, and its transfer there to trucks for delivery seems quite feasible. These trucks would deliver either to small distributing warehouses located in various parts of the city, or direct to the consignee, and would handle freight for shipment in the same manner. The expensive and frequently unsightly downtown freight houses would thus be done away with and the sites which they occupy be used for other purposes.

Causes and Prevention of Freight Car Derailments

Friction characteristics are suggested for the truck springs of 50-ton and 70-ton freight cars

By T. H. Symington

President of The Symington Company, Baltimore, Md.

IN this article derailments occasioned by defective track will not be discussed, but only those that in my opinion can be prevented by simple improvements in design.

It is well known that in England track is laid square, that is, with the joint of one rail opposite the joint of the other rail. In this country track is laid diagonal, that is, the joint of one rail is opposite the middle of the opposite rail. On some railroads in this country it is proposed that the track be laid dissymmetrical, that is, with the rail joint on one side opposite a third or a fourth of the other rail length.

The reason for this suggestion is to break up the synchronization with the rail joints, on both sides of the track, of the pendulum roll of high capacity, high gravity cars. Freight cars, particularly high gravity cars, supported on coil springs which give out as much work as is put into them, roll from side to side with a pendulum action, and the timing of this roll is constant, regardless of the extent of the roll, which is a fundamental law of the pendulum. This roll synchronizes with the regular intervals of the diagonal rail joints at certain definite speeds, dependent on the design and lading of the car. When the pendulum swing of the car body coincides with the rail joints, so as to increase this roll, it becomes cumulative owing to the regular impulses caused by the slight depressions of the rail joints on both sides of the track, except where the track is in perfect surface.

With the track laid dissymetrically, these evenly timed impulses causing an increase of the pendulum roll at the synchronizing speed for any car, would come from the rail joints on one side of the track only, and their frequency would, of course, be cut in half; but the opportunity for coincidence between the pendulum roll and the rail joints on one side or the other of the track, would be doubled. It is possible, however, that dissymmetrical rail joints would entirely break up the tendency to excessive rolling of the car body.

This cumulative roll from one side to the other results in the bolster springs going solid at times, and I venture to say that there is no high gravity 50-ton or 70-ton car in this country that has not, at some time, had its springs go solid under conditions favorable for the development of cumulative roll.

The Part Truck Springs Play in Causing Derailments

The A. R. A. standard 50-ton car spring is designed to go solid at 64,000 lb. and the 70-ton car spring at 80,000 lb., and it must be evident that these springs are often worked through a large range from practically no stress to a stress that will close them solid. This large working range of the truck spring results in its early failure through fatigue, or by its taking a permanent set which proportionately reduces its capacity. When the truck spring goes solid, there is always a localized bend-

ing moment somewhere in the coil, with an excessive resultant fibre stress, frequently causing the spring to break at this point. Truck springs on 50-ton and 70-ton freight cars are, therefore, giving general trouble.

The problem is difficult, because the height of the spring between the truck frame and the bolster is only $8\frac{1}{2}$ in., which is a small space for a different design of spring, and the width of the window opening in the truck frame limits the designer in this direction. Also, the necessity for interchangeability with the A. R. A. standard increases the difficulty of the problem.

Some railroads that have had very large breakages of springs under 50-ton and 70-ton cars are trying to solve this problem by making a stiffer coil spring of higher capacity, with a resulting reduced travel. These springs apparently help the problem of spring breakage because of the lower fibre stress in the steel, but they do not stop the car roll so as to prevent derailments. Other railroads are approaching the problem from the angle of preventing derailments, and they seem to want a spring of increased travel over the standard. This design necessarily increases the fibre stress in the steel, when the spring goes solid, and we can expect a shorter life for this spring, if we cannot in some way stop excessive car rolling.

It is my opinion that the present A. R. A. standard spring would be satisfactory if its normal working range could be reduced. There is only one way of doing this, and that is to stop the rolling of the car body.

Excessive rolling at the present critical speeds can be stopped by laying the track in a dissymetric manner, thereby breaking up the synchronization between the pendulum roll and the rail joints. All rolling can be stopped by developing a spring that has not a straight line action under compression and release, or in other words a spring that will absorb work and give out less energy than is applied to it.

The chart shown here illustrates the thought. Line A-B represents the compression and release curve of the A. R. A. 50-ton class D spring, and line A-C represents the compression and release curve of the 70-ton class H spring. Line A-D represents the compression and release curve of the higher capacity lesser travel spring that has been developed to minimize the breakage of springs on 50-ton cars, and A-E the curve for the same type of spring on 70-ton cars. Line A-X represents the compression and release curve of the longer travel spring for 50-ton cars and line A-Y the curve for the same type of spring for 70-ton cars.

What is needed, in my opinion, for a 50-ton car spring is a release line B-F-A, and for a 70-ton car spring a release line C-G-A, which would break up the roll of the car, regardless of the way the rails are laid.

In this connection it is well to realize that uncushioned shocks are most destructive, and result in broken axles, broken truck frames, broken and bent rails and the pound-

ing of rail joints out of surface. It would certainly seem desirable to have, in addition to the suggested release curve for the 50-ton and 70-ton springs, a yielding peak of high capacity at the end of the travel of the standard 50-ton and 70-ton car springs, to take the uncushioned shock off the truck frames and track, in the event of these springs ever being fully compressed. The peak referred to is indicated by the line *H-J* for the 50-ton spring, and the line *K-L* for the 70-ton spring.

Referring to track conditions, it is well known that the superelevation of the outer rail on curves is a compromise. It is not high enough for high speed passenger service, and it is too high for slow speed freight service.

Relation of Track Conditions and

Car Lading to Derailments

It may not be generally known that when the high gravity, high capacity car is standing on a curve with a

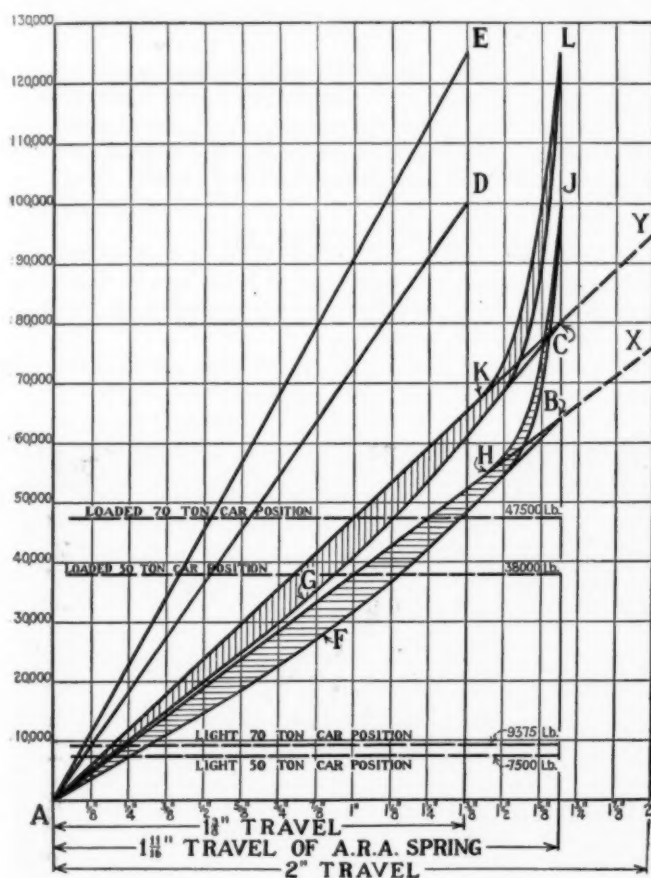


Chart Showing the Spring Characteristics Suggested for 50-ton and 70-ton Cars

superelevation of 5 in. for the outer rail, there is 25 per cent more weight on the inner rail than normal, and 25 per cent less weight on the outer rail than normal. This unbalanced load condition on the rails will vary with the open top car and the stiff closed top car, when only one truck is on the curve.

Many flexible open top cars can be blocked up on their four corners, and then one corner can be jacked up as much as 14 in. before another corner will leave its blocking. This is not true of a stiff closed top car. Therefore, in the flexible open top car the lading can be considered as divided into three parts, one over each truck, and one part in the center of the car. The excess weight on the inner rail on a curve with the open top car is largely a function of the lading in one end of the car. With the

stiff closed top car the excess of load on the inner rail is a function of the weight of the entire lading of the car.

In my opinion the rolling mass of the loaded car is the principal factor in derailments. If on a 5-in. superelevation curve the static excess weight on the inner rail is 25 per cent above normal, what must be the proportion of weight on the inner rail when the car body is rolling inward, due not only to the shifting of its center of gravity toward the inner rail, but due also to the momentum of this mass, particularly when the truck springs go solid over the inner rail? This, of course, coincides with a corresponding reduction in weight on the outer rail.

There are no sudden high spots in railroad track. Defects in surface are all low spots, and one theory is that we need soft, long travel truck springs that will push the truck wheels down into the low spots. If this theory were entirely sound, cars running light without load would be more apt to leave the track, because under the light car the standard springs are very slightly compressed. That this theory does not fully explain the problem, is proved by the fact that far more loaded cars leave the track than light cars. I believe that some unloaded cars of special truck design have been derailed, because of forces not incident to the conventional four wheel truck.

In my opinion this is what happens in derailments: When the roll of the high gravity car synchronizes with the rail joints, the roll becomes excessive, and the pendulum swing increases to an amount that causes the car truck to fulcrum on the wheel treads on the inner rail, and lift the outside forward wheel flange over the top of the outer rail.

Unfortunately when a car is on a curve the whole tendency of the wheels on the inner rail is to go ahead of the wheels on the outer rail, because the inner rail is shorter than the outer rail, resulting in the crowding of the outside front flange against the outside rail. Therefore, we have an ideal condition for derailment of the front outside wheel, because at the same instant the weight is taken off this wheel, it is forced against the rail so that it can easily climb over.

It must be evident, also, that when the car body has reached the limit of its swing towards the inner rail, the side bearings are in contact on the inside, and there is twice the normal side bearing clearance between the body and truck bolsters on the outside, so that the car body itself offers no resistance at the outer side bearing to prevent the outside wheels from lifting.

Freight Car Trucks Should Be Rigid

It is unfortunate that the center and side bearing friction between the truck and body bolsters increases the tendency of the wheels on the outer rail to lag behind the wheels on the inner rail, when entering a curve, thereby increasing the pressure of the outer front flange against the rail, resulting in an increased tendency for this flange to climb over the rail.

There must be some slippage of wheels on a curve, with resulting friction, when any forces prevent the coning of the wheels from adjusting these wheels to their proper position on the rails, to avoid the slippage. The spring plank is the only means for holding the truck side frames square with each other so as to minimize this wheel and rail slippage friction. The spring plank resistance, consequently, must overcome both wheel and rail frictional slippage resistance, as well as center plate and side bearing frictional resistance. The total amount of these resistances has been established by test.

If the center plate and side bearing frictional resistance

is minimized on a curve, the spring plank will hold the truck nearer square, and therefore reduce the pressure of the front wheel flange against the outside rail, and reduce the frictional resistance between this wheel flange and the rail. While the center plate and side bearing friction tend to hold the truck out of square on entering or while in a curve, this center plate and side bearing friction exert a force tending to square the truck when coming out of a curve, and it may be that we need some force of this character to help prevent the outside truck frame from continuing to lag behind the inside frame, when the car has come out of a curve on to a tangent.

Cars are held on the rails by the wheel flanges only, and these wheel flanges under the 50-ton and 70-ton cars of today have exactly the same height as the flanges under cars of 20 tons capacity 40 years ago. Furthermore, the track gage of 4 ft. 8½ in. under our big cars, is exactly the same as it was under the 20-ton cars.

It has been demonstrated that a rigid four wheel truck prevents the two inner wheels from going excessively ahead of the two outer wheels, resulting in less rail and wheel flange friction; but it is not possible to make our modern freight car trucks absolutely rigid in this respect. The A. R. A. truck is comparatively rigid because of the bossing of each side frame into the spring plank at four points. With a swivelling spring plank, the inner side frame is prevented from going excessively ahead of the outer frame by the unmechanical cramping of the truck bolster in the side frames, or by the unmechanical cramping of the axle ends in the journal boxes, dependent on the local clearances in each individual truck. Under these conditions, there is either rapid wear of the bolster and side frame pedestal ways, rapid wear with heating of journals and brasses, or both.

Suggestions to Prevent Car Derailments

We cannot today change our wheel flanges, the gage of our track, the longitudinal flexibility of our trucks, or the large inertia forces incident to our high capacity, high gravity cars. We cannot lay our rails in a dissymmetric manner to break up synchronization without prohibitive expense. We, therefore, are confined to what we can do with the cars themselves. In my opinion we can prevent derailments by lowering the center of gravity on new cars, and by designing the springs and car suspension to control the forces causing derailments.

If a car rolls sufficiently to lift the wheels on a straight track, derailments rarely occur, because the wheels normally drop back into their proper positions, with the flanges on the inside of the rails. Therefore our study will be confined to the conditions on a curve. If we prevent a car from rolling on entering or leaving a curve, we will, of course, prevent its rolling on straight track.

1—The first and most obvious improvement for high gravity cars is to put a spring of elliptic work-absorbing action under freight cars, with a curve of compression and release somewhat similar to lines *A-B-F-A*, or *A-C-G-A* shown in the chart. Of course this spring must be interchangeable with the present A. R. A. standard spring, and its fibre stress must be low enough to insure a reasonably long life for the spring.

2—As far as possible we should minimize center plate and side bearing friction, to prevent excessive pressure of the front outside wheel flange against the rail, which causes derailments, excessive wheel flange and rail wear, and also increases train resistance.

3—We should construct the four wheel trucks as rigid as is practical in the connection between the side frames and the spring plank.

4—We should arrange the spring suspension so that some load is always maintained on the outside wheels.

regardless of whether the outside springs are broken, or have taken a permanent set.

It is not practicable to maintain all track in surface and alinement, similar to first class main line track. Therefore, our problem is to design freight car trucks so that they will stay on a track that is reasonably out of surface and alinement.

The vertical jiggle of coil springs is largely responsible for coupler and knuckle wear, bolster and side frame pedestal wear, and the tendency of cars to uncouple in fast freight service. The vertical jiggle of coil springs and the excessive roll of the car body are largely responsible for damage to box and refrigerator car roofs.

A freer radial action will not only help prevent derailments, but will minimize rail and wheel flange wear. It has been demonstrated to reduce train resistance on curved track.

A cushioned blow, when the truck spring goes solid, will largely prevent side frame, axle and rail breakages, and make it easier to maintain track in proper surface.

A smooth running freight car, without roll, with no uncushioned shocks, and with free radial action of the trucks, will simplify and reduce the cost of maintenance of all track. The required strength of rails, wheels, axles, side frames, bolsters and car framing has been developed empirically in service, under excessive shocks, that can be largely reduced, and it is possible that the future freight car can be materially lightened.

It is my opinion that all open top and stiff closed top freight cars can be so equipped in their trucks that they can be operated with safety over the roughest track to be found on any railroad.



A Hydro-electric Power Plant, Swiss Federal Railways



Shippers and Railroad Representatives Attend Meeting

Standing: J. J. Pelley, vice-president, Illinois Central; A. F. S. Steele, chairman, Pacific Northwest; C. A. Lahey, vice-president, Quaker Oats Company; W. M. Maddox, traffic manager, Magnolia Petroleum Company; H. G. Taylor, chairman, Central Western; M. J. Gormley, chairman, Car Service Division; R. C. Ross, chairman, Mid-West, and W. F. Garcelon, chairman, New England. Seated: T. Davis, chairman, Ohio Valley; C. M. Reed, chairman, Trans-Missouri-Kansas; W. J. L. Banham, chairman, Atlantic States; J. F. Reed, president, Minnesota Farm Bureau, and A. G. T. Moore, chairman, South Eastern.

Shippers' Boards Meet at Chicago

First joint conference of all boards votes against the establishment of a national board

PRESENT conditions do not warrant the establishment of a national board according to the conclusion reached at the first joint conference of all of the shippers' regional advisory boards at the Blackstone hotel, Chicago, on January 7 and 8. The meeting was called to consider the inter-related problems of organization and policy in the conduct of the various boards and to devise means for the co-ordination of activities whereby further improvements may be made in the relations between shippers and the railways, as well as in the quality of transportation service furnished by the carriers. Although the conference opposed the establishment of a national board it agreed that since it may be found necessary from time to time to meet in general conference for the discussion of mutual problems, the American Railway Association should be empowered with the authority to call together representatives of all or any group of boards that may be desired for the purpose of conferring on problems whenever it is deemed necessary to do so. The two-day meeting at Chicago was characterized by the expediency under which the business was transacted, the conciseness of the reports and the nature of the recommendations adopted by the conference. The meeting was attended by 400 representatives of shippers and carriers.

The first day of the meeting was devoted to the reports of the chairmen of the individual boards who described conditions in their territories with respect to future transportation needs. On the second day the reports of sub-committees were presented to the general assembly and adopted. These reports were agreed upon by the committees previous to the opening of the meeting on January 7.

Recommendation to Change Name Opposed

The committee assigned to report on the uniformity in board functions and nomenclature and the desirability of keeping definite records of board attendance, recom-

mended that the names of the regional board organizations hereafter be known as the Transportation Advisory Boards instead of Shippers' Regional Advisory Boards. The meeting opposed this recommendation on the ground that the name Shippers' Regional Advisory Board was established among the public and any change which did not signify the nature of the board's work would hinder the progress of the organization. The general assembly then decided that the name of the territory served should appear first followed by Shippers' Advisory Board. The committee also suggested a uniform nomenclature for advisory board commodity committees to conform as nearly as practicable to I. C. C. groups and classifications. It also recommended that the suggestions as to the division of committee reports proposed be accepted with some amendments. The meeting also approved the suggestion that each board keep attendance records and that the chairmen of individual boards report at each meeting the disposition of the several subjects handled on the previous docket or carried over as unfinished business.

Activities of Contact Committees Defined

The Committee on the Function of Contact Committees and the Relationship of Contact Committees to Advisory Boards made the following recommendations:

(1) The uniform duty of contact committees shall be to act in an advisory capacity on all board subjects with the district managers.

(2) District managers shall be made vice-chairmen of contact committees.

(3) The members of contact committees shall act in the capacity of representatives of the railroads in their relation to activities of advisory boards and be available to meet with executive committees of advisory boards on all questions of board policies at the call of the general chairmen of the boards.

(4) It shall be the duty of contact committees to use

their best efforts to secure the proper character of railroad representation, both traffic and transportation, of the lines in the districts at the meetings of the advisory boards.

(5) Each railroad contact committee should organize itself so as to be governed by definite rules of procedure with respect to its conduct and membership in all matters which may arise for consideration.

(6) The railroad contact committees shall co-operate with the general chairmen of advisory boards in explaining the purposes of the boards to business men, bankers, and others interested with the understanding that the initiative in such matters must come from the advisory board.

(7) Each contact committee which has not already done so should adopt definite suggestions for a program to be submitted uniformly to all railroads for the education of railroad representatives regarding the regional advisory boards in order that they may be fully apprised of the movements.

(8) Contact committees shall be composed of such railroad representatives as are vested with authority to represent their lines on all subjects properly coming before the advisory boards.

(9) It shall be the duty of contact committees to assist district managers and to deal with the commodity committees through district managers to encourage proper observation of car service and other transportation relations.

(10) As far as may be consistent with the policies of individual railroads, use should be made of the various railroads' publicity channels including dining car menus, posters, etc., for informing the general public of the advisory boards and their purposes.

(11) Contact committees should be prepared to meet upon call with any commodity committee of advisory boards or to appoint railroad committees for this purpose.

(12) In respect to the functions of contact committees each district manager shall keep a current continuing docket of all matters which arise in board conferences, the same to be submitted immediately after each meeting to every member of the contact committees who shall be kept advised of reports of progress or settlement.

(13) The chairmen of contact committees should currently exchange ideas on reports of progress or new developments in the conduct of their work in order that the greatest practicable benefits from such relations among railroads of the different regions may be thus brought about.

(14) Each contact committee shall consider the propriety of arranging for a representative of one of the railroads in interest to make a talk covering a period of not to exceed 20 minutes at each meeting of an advisory board, on some topic which will be of interest and perhaps of educational value to advisory board members.

Recommendations of this committee, relative to the subject, "Railroad Reports—Written and Oral," were

(1) that written reports should be submitted to the interested district managers at least 10 days in advance of each meeting of an advisory board, (2) that reports should embrace a comprehensive outline of the existing transportation situation incident to the operation of the railroads, including a brief description of any important, new or improved existing facility in which members of advisory boards might be interested from the standpoint of the relationship of such improvements to service, (3) that the Car Service division shall compile an annual composite statement of the capital expenditures and the gross and net operating revenues of railroads during the year and submit this information to each board at an appropriate board meeting each year for the information

of the members of the board, (4) that statistical data pertaining to freight cars, locomotives, etc., required for reports of railroads to advisory boards, shall be based on the last official reports to the Car Service division, (5) that each railroad should designate an officer to represent it at each meeting of an advisory board in connection with discussions pertaining to written reports presented and supplement such reports by oral statements to the extent which may seem necessary or desirable.

Banking Committees Essential

The committee on the relationship of banking committees to the regional advisory boards outlined the relations of the banking interests of the country to the functions and objectives of the regional advisory boards and in view of the fact that the aims and purposes of the boards are of prime interest to the bankers of the country, recommended that every board establish banking committees in territories where they do not now exist. It also recommended (1) that the personnel of the committee be composed of executive officers of representative banks and banking organizations and that every such committee member assume a definite obligation to be present at each regional board meeting, (2) that the committee invite the co-operation and interest of representative bankers and banking organizations in the respective board districts and that the chairman of the banking committee be requested to inform the bankers of his territory concurrently of matters of special interest coming out of regional board meetings, (3) that so far as practicable the various banking committees bring to the attention of banking organizations the constructive work of the regional boards, urging their endorsement, (4) that the banking committee be requested to submit at each board meeting a comprehensive report dealing with financial and business conditions within the board district, and (5) that the respective banking committees be requested to bring to the attention of respective board meetings problems that relate jointly to transportation and the extension of credit.

Uniformity in Dissemination of Information

In order that the public may be accurately informed of the work of regional advisory boards, the committee on Uniform Methods of Board Publicity and the Proper Methods for Dissemination of Information to Board Members from the Car Service division recommended (1) that each board establish a publicity committee which will build up a contact with newspapers and other publications, (2) that ways and means be established for definitely and systematically acquainting the press with the functions and objectives of the boards and that the manager of the public relations section of the Car Service division be asked to consolidate and summarize the various publicity programs of the various boards for submission to each board, (3) that the minutes of the advisory boards include the names of officers, chairmen and vice-chairmen of commodity committees and the attendance records, that twice each year a roster of advisory board membership be published which will be currently accurate as to the total membership in any one region and will carry the revised by-laws of the board, (4) that the Car Service division make a complete digest of all circulars pertaining to car loading and operating statistics which it is now forwarding to board members, and that a copy of this digest be sent each district manager with directions to docket the subject with his next subsequent board meeting, so that each board or committee member may indicate which of the various circulars he desires to receive regularly, (5) that at an appropriate time the Car Service division compile and publish a quarterly

digest of the business situations in the respective boards' areas, that appropriate methods of dissemination and publicity be arranged, and that all regional boards, after appropriate analysis of the business and economic situations in their districts, arrange to receive their commodity committee reports to forecast business conditions for the quarter beginning with January 1, April 1, July 1 and October 1, (6) that regional board meetings be adjusted to take place at a reasonable period in advance of the beginning of each of these quarters, that the Car Service division compile a list of the dates on which board meetings are being held and after submission to and revision by the individual boards publish a schedule of such meeting dates. The committee recommended that the regional board meetings be held during the months of December, March, June and September.

Membership of Boards Expanded

The committee on Methods for Expanding the Membership of the Boards recommended that the expansion of board memberships is advisable and that any person interested in promoting the objects of the boards should be eligible for membership, the method of expansion to be left to each individual board.

The committee on the Relation of Government Departments and the Federal Reserve System to the Regional Boards felt that the boards are glad to have the assistance of the departments of agriculture and commerce, and that the utilization of the various departments is available within the provinces of the individual boards. Because of the importance attached to the duty of membership on the executive committee, it was recommended that careful consideration be given to the selection of members of executive committees.

The report of the committee on the Necessity of Keeping Rate Classification Matters out of Board Deliberations called attention to the by-laws of the boards which include matters involving transportation performances and car detention, matters of rates and charges for transportation movements and accessorial services and recommended that the general policy be continued. The committee did feel, however, that discussions of rules and regulations concerning transportation services are frequently necessary in order to achieve the primary purposes of the organization. Many of these rules and regulations are matters of tariff record and the committee suggested that the discussion of such rules and regulations should not be barred, but for final settlement they should be referred to the agencies of the railroads and the shippers which have been established for that purpose.

Boards to Aid Agriculture

The committee on the Relation of Regional Advisory Boards to Agricultural Distribution Problems recommended that through the commodity committees the regional advisory boards constitute the proper form of organization for the constant study and analysis of the distribution problems of agriculture with a view of correlating the opinion of all economic agencies of each territory in the promotion of a more orderly marketing and a better distribution of farm products. It also felt that in view of the relationships established by the Car Service division and the Department of Agriculture with respect to market news service, the Car Service division should consult with and obtain the views of various interested commodity committees as to the class and timeliness of market information and when requests are made upon the Car Service division for additional information for market services that the various commodity committees interested be consulted as to the necessity for that information, its form, and its method of distribution.

The committee on Methods for Improving Commodity Committee Reports recommended that where difficulties are being encountered by commodity committees in securing proper data for inclusion in their commodity reports, some officer of the trade association representing that particular commodity be included on the committee as vice-chairman or a member. It also suggested that for the purpose of affording an opportunity to comment intelligently upon or criticize commodity and railroad reports, they be printed in advance and distributed not less than five days prior to the date of the board meeting. The committee also recommended changes in the nomenclature in order that there may be some uniformity, together with a reduction in the composite list of commodity committee reports.

Board Chairmen Report Favorable Conditions

J. F. Reed, chairman of the Northwest Regional Advisory Board and president of the Minnesota Farm Bureau, said: "Today in the Northwest the most outstanding accomplishment of all our industries is the manner and character of service now being rendered by the railroads. The roads have not only met every demand of our board, but have gone far beyond its demand in providing service. When their equipment was thought insufficient to carry the load, new equipment and power was provided without stint. Service became the slogan of the carriers and this service now so greatly outstrips any ever heretofore given in this area that it forbids comparison."

W. J. L. Banham, chairman of the Atlantic States Shippers' Regional Advisory Board and general traffic manager of the Otis Elevator Company, reported: "The complaints brought to the attention of the Atlantic States Shippers' Advisory Board since its organization have been relatively few, and, in most cases, of a trivial nature. One of our greatest achievements has been a carefully worked out plan which made it possible to handle currently the tremendous trans-continental movement of grapes into the New York district with very little congestion, reducing habitual claims to an infinitesimal amount. Because of the better condition of the fruit at the time the sales were made in the New York terminal, a much better price for the growers prevailed. Indeed, it has been estimated that in 1924 the plan was directly responsible for an increased revenue to the California growers of approximately \$5,000,000 over 1923, and we have no doubt that the season just past will show even better results."

A. F. S. Steele, chairman of the Pacific Northwest Shippers' Regional Advisory Board and general manager of the Apple Growers' Association, reported on the future transportation needs of his territory, as follows: "Lumber is the most important commodity produced in our territory. This industry requires approximately 300,000 cars a year for the movement of its products to market. The general car requirements for grain movement from the producing centers to Pacific Coast elevators will be in the neighborhood of 34,000 cars a year. The production of fresh vegetables will amount to approximately 12,000 cars, while car requirements for canned fruits and vegetables will be something like 4,000 cars. The canned fish industry likewise will require about 4,000 cars. Coal production for our territory for the coming year will approximate 62,000 cars, ore movement will take about 12,000, and the estimated production of cement will be in the neighborhood of 8,000 or 9,000 cars."

E. B. Spiller, chairman of the Southwest Shippers' Regional Advisory Board and secretary and general manager of the Texas and Southwestern Cattle Raisers' Association, reported: "Car shortages and railway

service complaints have been practically eliminated in our territory. We have handled, from time to time since the organization of our board, a number of matters pertaining to car supply and transportation service, as well as problems relating to operating economies. As far as I know, all such matters were disposed of with entire satisfaction to both the shippers and the carriers. We have kept the railways fully informed of traffic possibilities, so that service programs might be formulated in advance of our heavy movements. Shippers generally have co-operated with the carriers, the result being the practical elimination of car shortages."

L. G. Macomber, chairman of the Great Lakes Shippers' Regional Advisory Board and traffic director of the Detroit Chamber of Commerce, reported: "The Great Lakes Regional Advisory Board was organized on June 26, 1923, and has made exceptional progress, both in membership and attendance at the board meetings. One hundred and thirty-two attended our second meeting, and 734 were present at our last meeting. The membership is now well over 2,000. The influence of the board is being felt throughout the territory and transportation conditions are excellent. The predicted shortage of open top cars last fall was averted, permitting a steady movement of sugar beets and bituminous coal. . . ."

A. G. T. Moore, chairman of the Southeast Shippers' Regional Advisory Board and traffic manager of the Southern Pine Association, reported: "Transportation conditions in our territory are very healthy and the only trouble confronting us at this time is the situation in Florida. This unprecedented local situation has caused some inconvenience to both the carriers and the shippers, but neither of them can in fairness be criticized for failure to anticipate fully the conditions which arose. We have found the shippers and the receivers in our territory willing and eager to lend their co-operation and support to maintain permanently the highly efficient performance of the last three years and to cement the very cordial relationships now existing between the transportation departments of the carriers, the Car Service Division of the American Railway Association, and the shipping public in general."

Robert C. Ross, chairman of the Mid-West Shippers' Regional Advisory Board and general traffic manager of Joseph T. Ryerson & Sons, reported: "The Mid-West Regional Advisory Board has held seven regular meetings since its organization. At each succeeding meeting there has been evidence of increasing interest in accomplishing its objects. We now have 41 commodity committees to deal with the various subjects presented. In the past there have been what are called 'car shortages'. As a matter of fact, these were not shortages, but were simply conditions of dislocation of cars. With more complete reports of anticipated car requirements, and co-operative work with the railroads both individually and especially through their Car Service Division, this old trouble of so-called 'car shortages' will be practically eliminated. Through the shippers' regional boards the farming industry has gained a much needed point of contact. . . ."

Clyde M. Reed, chairman of the Trans-Missouri-Kansas Shippers' Regional Advisory Board, reported: "For three successive years there has been no shortage of freight cars of any kind or class for the movement of grain, livestock, oil, or any other commodity in our territory. . . ."

William F. Garcelon, chairman of the New England Shippers' Regional Advisory Board and secretary-treasurer of the Arkwright Club, reported: "Our quarterly meetings bring acquaintance and friendliness between shippers and railroads which develop co-operation. . . ."

H. G. Taylor, chairman of the Central Western Ship-

pers' Regional Advisory Board and chairman of the Nebraska Railway Commission, reported: "The most important accomplishment of the Central Western Board concerns the human element. While this element cannot be measured by statistics, while it is intangible and elusive, it is none the less potent and powerful. The genius embodied in the regional board idea lies in the recognition of that fact. There is a nearer approach to complete harmony between the public and the railroads in our territory today than ever before in my memory. . . ."

Regional Appointments to I. C. C. Proposed

WASHINGTON, D. C.

THE movement for the passage of a bill providing for appointments to the Interstate Commerce Commission on a regional or district basis in order to give representation to all parts of the country seems to be gaining impetus in Congress. Originally started because for so many years there was no member of the commission from a state south of Kentucky, the opposition in the Senate to appointments of men not from the South has been growing so that it apparently has not been quieted by the recent appointment of R. V. Taylor of Alabama, although the committee on interstate commerce has voted in favor of his confirmation. A bill providing for regional appointments had already been introduced by Senator Smith of South Carolina and on the morning of the day the Senate committee voted in favor of Mr. Taylor it had voted to approve it in principle. Representative Rayburn of Texas has also introduced a bill, H. R. 7483, providing for the appointment of twelve commissioners chosen from twelve specified districts, although it is proposed not to disturb the present commissioners but to apply the new plan as vacancies occur. Senator Smith's bill proposes twelve commissioners, an increase of one as compared with the number now authorized. He was appointed chairman of a sub-committee to draft a new bill and planned to have a meeting on January 14 to consider such a bill, possibly conferring with some members of the present commission to get their views on the subject.

President Coolidge has for some time sympathized with the desire of the South for representation on the commission and sought to recognize it in his appointment of Mr. Taylor, but it has been stated at the White House that he is not in favor of a specific requirement in the statute that commissioners shall be chosen geographically. It was thought for a while that the resignation of Commissioner McChord on January 1 would remove the demand for an increase in membership of the I. C. C.

Representative Garber of Oklahoma has introduced a bill, H. R. 7092, which proposes to curtail the membership of the commission to seven and to create five Regional Commerce Commissions of five members each, to have jurisdiction in the Southern, Prairie, Southwest, Northwest and Pacific regions, respectively; four of the present commissioners to be transferred to the new regional commissions. It provides that the regional commissions shall have and exercise powers similar to those of the present commission in regard to classification, rate and service matters within their respective regions; also with respect to certificates of public convenience and necessity, and that complaints regarding interregional transportation rates or service shall be referred to a joint commission consisting of at least one member from each region or territory involved. Incidentally the bill is made to apply to common carriers by railroad, bus or truck.

Atlantic Coast Line Prosperity

*Road has had increase of 44.5 per cent in traffic in five years
as result of Florida growth*

IT is estimated that the Atlantic Coast Line will be found, when the year's figures are completed, to have reported for 1925 net earnings after charges equivalent to over \$26 a share on its common stock. Such, therefore, is the degree in which this already favored property has benefited from the phenomenal expansion of business moving between the Northeast and Florida. In 1924, the road had net earnings after charges of \$19.34 a share and in 1923 it earned \$18.64 a share. Dividends on this stock have been at the rate of \$7 a

line from Richmond, Va., to Jacksonville, Fla., is now double track throughout. This work has been under way for several years. Completion was scheduled for 1927 but the program had to be anticipated because of the recent unexpected expansion of business. About one-third of the road's entire mileage lies within the borders of Florida, and additional mileage in that state is under construction. The Atlantic Coast Line serves the coastal plain of the Southeast as distinguished from its neighbors, the Seaboard Air Line and the Southern, which serve the uplands and the Piedmont area. As a result, the Coast Line has been favored as compared with them by more favorable grades, which reduce operating costs. Furthermore, its prosperity has been of longer standing. To explain why would require reference to the early history of the properties. Nevertheless, beyond that, it is not unlikely that a pertinent reason has been the comparatively greater agricultural yield of the coastal plain as compared with the upland areas. Prosperity has come to the Southern primarily because of the South's new industrial position. The Seaboard has been assisted by the region's industrial growth supplemented more recently by the Florida traffic.

The Coast Line is assisted by somewhat peculiar traffic conditions. Whereas most roads have their heaviest traffic in October, or in the fall of the year, the Coast Line's best months are from December to May. From the standpoint of total operating revenues, October ranked in 1924 not first but ninth, and in 1923 eighth. The best month in each year was March. The Coast Line's traffic is about 12 per cent products of agriculture, half of which are fruits and vegetables. Bituminous makes up only 4 per cent, and products of mines total about 29 per cent. Products of forests total about 30 per cent, and manufactures and miscellaneous about 23 per cent. The agricultural traffic lasts almost the year round, Florida products coming in during the early winter and being followed by vegetables grown in successively more northern areas as the season advances. It was not long since, incidentally, that something like 95 per cent of the box car equipment owned by the Coast Line was of the ventilated type. In more recent years, shippers have shown an increasing preference for refrigerator equipment, made available notably by the Fruit Growers Express Company, in which the Coast Line has a 27.27 per cent interest.

Benefits from Florida Boom

The really outstanding feature of Atlantic Coast Line operations in recent years has been the very complete manner in which the road has benefited from the new



The Atlantic Coast Line

share since 1912, except for the years 1915 and 1916 when 5 per cent was paid. In 1924, an extra dividend of 1 per cent was paid, and in 1925 two such extra dividends of 1 per cent were paid. The stock now sells on the stock exchange at a price of \$255 a share.

General Characteristics

The Atlantic Coast Line operates 4,866 miles of line. It owns a controlling interest in the Louisville & Nashville, which operates over 5,000 miles, exclusive of its several subsidiaries, does about 2½ times as much business, and earns about one-half more net railway operating income than the parent company. The Coast Line's main

TABLE I—ATLANTIC COAST LINE OPERATING RESULTS, SELECTED ITEMS, 1916 TO 1924

Year	Mileage	Revenue ton-miles	Revenue passenger miles	Rev. per ton-mile, cents	Total operating revenues	Total operating expenses	Net operating revenues	Op. ratio	Net railway operating income	Dividend income	Net after charges
1916	4,727	2,514,243,000	407,151,000	1.002	37,322,085	24,060,605	13,261,480	64.4	12,259,687	2,750,986	9,671,627
1917	4,781	3,001,835,000	517,787,000	0.965	44,063,331	29,773,995	14,289,336	67.5	13,239,902	2,800,000	10,701,294
1918	4,820	3,374,351,000	643,309,000	1.081	56,992,329	42,663,303	14,329,026	74.8	11,155,520	2,691,429	7,171,954
1919	4,868	3,137,925,000	668,054,000	1.302	63,559,015	53,499,911	10,059,104	84.2	6,539,900	2,689,619	7,187,537
1920	4,890	3,290,283,000	638,558,000	1.465	74,121,956	68,943,732	5,178,224	90.3	1,380,569	2,890,384	7,684,156
1921	4,893	2,479,340,000	481,453,000	1.797	66,730,768	58,005,833	8,724,935	87.0	6,860,107	2,754,425	1,790,569
1922	4,852	3,031,173,000	460,796,676	1.612	70,823,345	52,033,448	18,789,897	73.47	14,416,370	3,221,772	11,604,074
1923	4,861	3,712,154,000	518,448,000	1.524	80,882,311	59,868,428	21,013,882	74.02	15,496,609	3,222,087	12,797,073
1924	4,866	3,764,631,000	512,238,000	1.522	81,785,921	60,335,128	21,450,796	73.77	15,179,185	3,897,690	12,589,983
1925, 11 mos.	.....	.....	.....	.....	84,730,574	58,591,543	26,139,031	69.2	18,410,850	.....	.....

Figures of net railway operating income for 1916 to 1921 from carriers' annual report for 1921; not shown since in annual reports.

prosperity of the state of Florida. No road outside, of course, of the Florida East Coast, has benefited in the same degree. It is striking enough, possibly, to point out in the first place that in the first ten months of 1925 the road moved 18.5 per cent more net ton-miles than in the same period of 1924, and that in the first eleven months of 1925 the road benefited from this increased business to the extent that its net railway operating income increased no less than 38.4 per cent over the first eleven months of 1924.

Comparisons of Traffic Increases

The statement was made above that no road outside of the Florida East Coast had benefited in greater degree from the Florida situation. This is probably most adequately shown by a comparison of the net ton-miles figures for the first 10 months of 1925 with those for the first 10 months of 1920, which, inasmuch as 1920 was a year of very heavy traffic, is admittedly as good a starting point as any. In the first 10 months of 1925 as compared

Unit	10 Mos. 1920	10 Mos. 1922	10 Mos. 1923	10 Mos. 1924	10 Mos. 1925
Average mileage operated.....	.....	.....	4,860	4,865	4,888
Net ton-miles, millions.....	3,185	2,996	3,831	3,883	4,605
Car miles per day.....	23.0	26.6	29.8	28.9	30.5
Net tons per loaded car.....	21.3	19.6	21.2	20.7	21.6
Per cent loaded to total car miles	68.9	65.4	65.9	63.6	62.8
Net ton-miles per car day.....	337	341	416	379	412
Freight cars per train.....	32.5	36.9	37.5	39.1	41.3
Gross tons per train.....	1,110	1,194	1,254	1,277	1,389
Net tons per train.....	462	462	510	501	546
Train speed-miles per train hour.	11.5	12.6	12.1	12.5	12.0
Net ton-miles per train hour.....	5,326	5,798	6,172	6,264	6,533
Lb. coal per 1,000 gross ton-miles	.....	125	134	128	120
Loco. miles per loco, day.....	54.5	53.3	62.0	58.5	66.6
Per cent freight locos. unserviceable	32.6	24.4	19.0	12.6	13.1
Per cent freight cars unserviceable	11.1	15.2	8.3	4.5	4.2

with the same period of 1920, the roads of this country as a whole showed an increase in their net ton-miles of one-quarter of one per cent. In the eastern district, there was a decrease of 5 per cent. In the Pocahontas region, as a result of the expansion of non-union coal mining activity, there was an increase of 31 per cent. The southwestern region was favored with an increase of 10½ per cent, but the western district as a whole had a decrease of 2½ per cent. The southern region was one of the favored areas. It had an increase in its net ton-miles—in the first 10 months of 1925 as compared with the same period of 1920—of 11½ per cent. How, then, did the roads serving Florida fare? First, the Florida East Coast had an increase in traffic of no less than 72 per cent.

There is now railroad congestion in Florida. Is there any road in this country, perforce, that could meet a 72 per cent increase in its traffic in a five-year period without congestion? The Seaboard Air Line, known to have benefited greatly from the Florida boom, had an increase of 28.2 per cent. The Southern, which is said to have been benefited to some extent, is surprisingly found to have had no increase in its total net ton-miles at all but instead had a decrease of one per cent. The Coast Line's increase in the five-year period was no less than 44½ per cent, and its subsidiary, the Louisville & Nashville, reported no less than 32.4 per cent.

Loss of Passenger Business

The *Railway Age* has made editorial notation of the fact that in recent years railway traffic has failed to show any marked increase, and that the former ratio of increase whereby freight traffic used to double in periods of about 12 or 13 years is no longer being maintained. The marked contrast between the situation of the rail-

ways of the country as a whole, and the peculiar situation of the Atlantic Coast Line in these respects is probably the most significant feature of all. It is noteworthy, however, that the Coast Line does not prove to be an exception in so far as concerns the loss of its passenger traffic. In this respect, it follows the general rule, the hegira to Florida notwithstanding.

\$100,000,000 Capital Expenditures

The Coast Line seems to be meeting the problem of handling its markedly increased freight traffic with praiseworthy aptitude. This has not followed by chance. Figures of the 1925 capital expenditures will not be available until the annual report for the year is published in March or April. However, it is stated on reputable authority that the management has, since the termination of federal control, spent some \$100,000,000 for capital improvement, inclusive, notably, of double tracking, extensions of line, and equipment. It is very likely that the figure is a gross and not a net figure, and does not include deductions for retirements. If it is correct, there is represented in either case a remarkably extensive improvement program, because the road's investment in road and equipment on December 31, 1924, was \$230,000,000.

The really remarkable thing about the Coast Line's sizable expenditures for capital, however, is that the road has financed only \$6,000,000 of it through the issuance of securities. This was an issue of equipment trust certificates made in 1921; the rest of the expenditure was made without new financing. It is noteworthy that in 1924 the road paid out \$5,486,896 to its common stockholders, or 8 per cent. The road at the end of 1924 held \$68,805,558 investments in affiliated companies, mostly in the form of stocks. It will be noted that the road's fixed charges were earned 2½ times and that dividend income totaling \$3,897,690 equalled two-thirds of the total dividends paid to common shareholders.

Improvement in Operating Statistics

Any student of railway operating statistics knows how markedly the figures are affected by changes in the volume of traffic. In view of this, one will expect to find great improvement in the operating figures reported by the Atlantic Coast Line. There is given in Table II a selection of the road's figures for the ten-month periods of 1920 and 1922 to 1925. Of particular interest is the increase in car miles per day from 23.0 in 1920 to 30.5 in 1925. In the same period, the train load, although still below the average for the southern region, has increased from 462 to 546, and the net ton-miles per train hour from 5,326 to 6,533. Among the other figures, one will notice the remarkably excellent fuel performance in 1925 of but 120 lb. of coal per 1,000 gross ton-miles, and the excellent equipment condition of only 13.1 per cent locomotives unserviceable, and only 4.2 per cent bad order cars. It is likewise of interest to observe the gradual increase in locomotive miles per locomotive day from 54.5 in 1920 to 66.6 in 1925.

The Atlantic Coast Line reported for 1924 net railway operating income of \$15,179,185 of which \$13,304,781 was made in the first 11 months. In the first 11 months of 1925, its net operating income was \$18,410,850, an increase of 38 per cent. The best operating ratio the road has reported in recent years was in 1916, when the figure was 69.41 per cent. In 1924, the operating ratio was 73.77, but for the first 11 months of 1925 it had declined to 69.2.

Judging the picture as a whole, it seems as if there could be few, if any, other roads in this country more favored by circumstances than the Atlantic Coast Line.

Norfolk & Western Train Control

I. C. C. approves 106-mile installation, but with reservations—A million-dollar improvement, including \$376,000 for automatic control

WASHINGTON, D. C.

THE Interstate Commerce Commission on January 9 made public the report of Division I, Commissioners Esch and McManamy, dated January 2, finding that the installation of the automatic train-control system of the Union Switch & Signal Company* on the Shenandoah division of the Norfolk & Western meets the requirements of the commission's order, except as to certain points indicated; and prescribing requirements which the company is expected promptly to comply with, including a clause stipulating that provision be made requiring engineers to acknowledge at succeeding stop signals. An abstract of the report follows:

The device under consideration is an automatic train control (three-speed) of the continuous-induction type. The installation inspected and tested was completed on November 10, 1924, and placed in service February 15, 1925. It extends from Shenandoah to Hagerstown Junction 106.1 miles, single track. There are 41 locomotives equipped with the device.

The cost, as reported by the carrier, is as follows:

1. Total cost of the train control installation, less power lines, power apparatus, signals and cost of change in existing signal system, less salvage:	
Wayside train control apparatus, labor and material.....	\$194,200.00
Engine apparatus, 41 engines.....	182,002.85
	\$376,202.85
2. Total cost of power lines and power apparatus for train control, less salvage:	
Three-phase 4,400-volt 60-cycle, power transmission line, labor and material.....	162,415.76
3. Total cost of signal system installed in connection with train control, less salvage:	
Automatic signal system, position-light signals, A. P. B.	447,343.53
4. Total cost of change in existing signal system made necessary by train control, less salvage.....	None
5. Total all other costs, consisting entirely of highway crossing protection	36,958.73
Total cost of installation.....	\$1,022,920.87

The absolute permissive block signal system throughout this territory consists of normal clear, three position, U. S. & S. Co., position-light signals, with double instrument case, on concrete foundations. Two-post bracket signals are located at each end of each passing siding. These are absolute signals. Each absolute signal is distinguished by a marker light. The high signal on these bracket posts governs movements on the main line. The low signal governs movements from the passing siding. A one-arm or a two-arm pull in stop-and-proceed signal is located in advance of passing siding switches. Intermediate signals between passing sidings are of the one-arm type. These signals are all of the stop-and-proceed description with the exception of those having the grade indication feature and the absolute signals located at the electro-mechanical interlocker at the Southern Railway crossing at Riverton and the mechanical interlocker at the Baltimore & Ohio crossing at Charlestown.

Power for the signal and train control systems is furnished from a high-tension line which parallels the track. This power is obtained from commercial companies at Shenandoah, Berryville and Hagerstown, and an emergency supply is provided for from an automatic substation at Stanley, and an auxiliary station of the railway shops at Shenandoah. The power is transmitted at 4400 volts, 3 phase, 60 cycle, over a triangular, transposed, three conductor No. 4 solid copper wire line carried on poles. The line is protected throughout its length by a stranded galvanized wire, attached to bayonet brackets on the top of the poles and grounded at every eighth pole. Air-break sectionalizing switches, located on the crossarms and operated by a long handle extending down the pole, are provided at each passing siding.

Operation of the Train Control System

The system being properly installed, electrically energized and pneumatically charged, the operation is as follows:

*The Union system as installed on the Oregon-Washington, was reported on by the Commission last August; see *Railway Age*, August 29, page 400.—EDITOR.

In a Clear Block:

When the track ahead is clear and axle and loop currents of normal relative polarity flow in the track rails, the currents induced in the receivers will be amplified and will energize the train control relay so as to close its right contacts. The H magnet valve will be energized, thereby maintaining the pneumatic apparatus in the high speed condition. The H light will be displayed indicating to the engineer that the block is clear and that he may proceed at authorized speed. As the train proceeds through the clear block and passes from one track section to another, each track section having axle and loop currents of normal relative polarity flowing in the track rails, the H light will continue to indicate a clear block condition.

Exceeding High Speed in a Clear Block:

If the train exceeds the high speed limit in a clear block, the speed governor pushes open the high speed application valve and initiates an automatic brake application which will bring the train to a stop. The engineer, however, can release the brake in the usual manner after the speed is reduced to that below the maximum. The H light burns during overspeed automatic applications and the only indications in the cab that an automatic application has been initiated are the drop of the application gauge pointer and the coinciding of the red (main reservoir) and black (brake pipe) pointers of the large duplex gauge. When the speed falls below the maximum, if meanwhile the brake valve has been lapped, the gauge pointers will return to their normal positions, indicating that the brakes may be released in the usual manner.

Passing an "A" Point Unacknowledged:

On passing the A point for a stop signal, the train control relay will reverse, extinguishing the H indication and lighting the M indication, and de-energizing the high speed and energizing the medium speed magnet, causing the high speed relay valve to ship. By this movement the high-to-medium timing valve and reservoir are connected to the high-to-medium blow-down valve operated by the crosshead of the speed governor. This blow-down valve is so designed that between high and medium speeds, the size of the orifice is regulated by the governor so that it is very nearly proportional to the speed of the train. The pressure in the blow-down reservoir will decrease at such rate as to cause the timing valve to operate in 5 seconds for the maximum speed and in 40 seconds for the medium speed, and in proportional time for speeds intermediate between these two. When the timing valve operates, the application pipe is vented to atmosphere through the medium speed application valve and the application valve operates to initiate an automatic brake application unless the engineer is alert and delays, or prevents, the automatic application by properly reducing speed.

If the train is running below the medium speed limit, the medium speed application valve is closed and there will be no automatic application of the brakes at the A point, although the train must be reduced to low speed before reaching the stop signal.

Passing an "A" Point Acknowledged:

If the engineer, just before passing an A point above medium speed, makes a manual brake application, the application pipe will be blanked at the reduction suppression valve and no automatic application will result when the medium speed application valve in the governor opens. Therefore, while the brake valve is in service position or while the brake pipe is being vented by a manual application, as long as the brake handle is not returned to the release or running position the open medium speed application valve will not cause an automatic brake application.

In some cases an engineer retards the speed of the train by two or more reductions, each in turn being initiated after the brake pipe stops blowing; the engineer's brake valve being placed in lap position between reductions. The reduction insuring valve and timing reservoir are provided to insure that during the actual discharge of the brake pipe as described, and for a sufficient time interval thereafter to permit the split reduction braking, an automatic brake application will be suppressed through the reduction suppression valve.

Another means of suppressing an automatic brake application is effective when a full service reduction has been made, whether this application is split or made by a single reduction. This is accomplished by the reduction insuring valve and the suppression limiting reservoir and is effective until the engineman's brake valve is moved either to running or to release position.

If a suppression of the automatic brake application is maintained by one of these methods until the train has decelerated to medium speed, the medium speed application valve will be closed, and the brakes may be manually released without an automatic application. However, should the train then be accelerated to speed above medium, the medium speed application valve will open and initiate an automatic application unless again suppressed by a manual application.

Passing a "B" Point Unacknowledged:

On passing the B point for a stop signal the train control relay will be de-energized, due to the absence of loop current, and its middle contacts will close. The indication will change from M-to-L, and the medium speed magnet will be de-energized. By this action the medium-to-low timing valve and reservoir are connected to atmosphere through the medium-to-low blow-down in the governor. The pressure in the blow-down reservoir will so decrease as to cause the timing valve to operate in 5 seconds at the medium speed and in 40 seconds for the low speed and in proportional time for speeds intermediate between these two. When the timing valve operates, the medium speed relay valve shifts and vents the application pipe to atmosphere through the low speed application valve, and also allows it to discharge into the stop reservoir. The drop in pressure in the application pipe initiates an automatic full service application of the brakes which stops the train. In order to effect a release of the brakes, the engineman must place the brake valve handle in lap position and allow it to remain there for a short period of time, until the train control valves have been restored to normal, after which the brakes may be released in the usual manner.

Passing a "B" Point Acknowledged:

If the engineman on passing a B point acknowledges the change in conditions by operating the acknowledging valve and makes a manual application so as to bring the train below the low speed limit, the automatic application will be prevented.

If the engineman attempts to exceed the low speed limit, the application pipe will be vented to atmosphere through the low speed application valve in the governor and an automatic application will result, which cannot be released until the speed of the train has again been reduced below the low speed limit.

In a Stop Block:

When the train passes the insulated joints at the stop signal and enters the track section beyond the stop signal, these track sections to the potential stopping point, i.e., train in the block, open switch, or other obstruction will be devoid of either or of both loop and axle currents. The apparatus on the locomotive will therefore remain in the same condition in which it was just before passing the stop signal.

Change From Lower to Higher Speed Limit:

If the train is running below a restrictive speed limit and the conditions which caused such restriction are removed, the train may accelerate to the new speed limit indicated by the cab light, no valve manipulation being necessary. If the train is above the lower limit and the change occurs with the brakes manually applied, they may be released immediately. If the brakes are applied automatically, the engineman's valve can be placed in lap position to restore the train control valves and then the brakes can be released.

Running Backward:

When a locomotive is running backward and its movement has established the traffic direction, an L indication is carried and a low speed restriction is imposed. However, when the movement of the locomotive has not established the traffic direction, a more favorable running indication may be carried.

Requirements and Exceptions

As a result of this inspection and test, it was found that the installation meets the requirements of our specifications and order, except as noted below, and it, therefore, is approved, except as hereinafter indicated.

1. Provision must be made requiring engineman to acknowledge at succeeding stop signals.

2. During the tests, which were made during very warm weather, both pressure regulating valves stuck open, the safety-valve, under these circumstances, failing to prevent an increase in the train control system pressure. The effect of an increase in train control pressure is to increase the time of initiating an automatic application after a change of indication to a re-

strictive speed occurs, and therefore, it is imperative that provision be made to maintain the train control pressure constant at the required amount without fail.

3. The pneumatic portions of this device containing the functional parts essential to brake application, and which are located outside of the cab, must adequately be protected against freezing because if these valves should be sealed closed in normal position the result might be serious.

While the results obtained during the past winter with the housings now being generally applied were reported as satisfactory, it is not felt that the experience thus obtained was extensive enough to be conclusive, and the matter should have very close attention on account of its manifestly great importance.

The railway company is expected to comply at once with the above-stated requirements and promptly and currently to inform us as to the progress made in conforming thereto.

The railway is expected to comply at once with the following requirements as to inspection, tests, and maintenance:

1. The train control equipment on all locomotives operated in train-control equipped territory should be carefully inspected and tested upon arrival at and before departure from designated inspection and repair points. The importance of such inspection and tests was demonstrated on September 21, 1925, when locomotive 598 did not receive an automatic brake application at the B point for signal 1413 at stop. Investigation developed that the suppression valve was stuck in the suppressing position due to several particles of metal wedging the valve stem in its guide. The inspection and test should include all parts of the apparatus, and before each trip all seals should be inspected to see that they are unbroken and the apparatus properly cut in for service. A daily report as to the condition of the apparatus should be made on a form provided for that purpose and forwarded by the inspector to a designated officer.

2. The roadside apparatus should be frequently inspected and tested for broken or crossed wires, grounds and foreign current and the insulated joints frequently inspected to insure that they are in proper operative condition; reports thereon being made on a form provided for that purpose and regularly forwarded by the inspector to a designated officer.

3. A form should be provided for and used by each engineman in reporting failures of the apparatus and any irregularities in the operation of the device. All such information should be reported in detail.

In the following specific respects the railway company should promptly take the necessary action to carry into effect the recommendations made:

1. It should be definitely determined that the interval between the A and B points and the signal in advance is sufficient in all cases to provide adequate braking distance.

2. During the inspection, evidence was noticed of momentary influences of foreign current upon the locomotive equipment, and since stray currents could, under certain circumstances, cause serious trouble, the matter is mentioned here inasmuch as it would be necessary, should such trouble develop, to promptly employ adequate means for overcoming the difficulty.

3. The roadside circuits should be modified so as to conform to the revised circuit plans at those points where an H indication may be carried in a stop but unoccupied block.

4. The type of fouling protection employed should be given careful consideration with a view to possibly providing increased protection.

5. The circuits at Riverton and Charlestown interlockers should be arranged to prevent a towerman displaying a clear signal for a Norfolk & Western train when a crossing train occupies the track between the home signals at these crossings.

Inasmuch as the split reduction feature repeatedly failed to function during the tests (although in such cases it increased but slightly the time consumed in automatically reducing brake pipe pressure, as compared with a manual reduction) the carrier may desire to consider whether the simplification which the elimination of this feature would permit is desirable.

DANIEL UPTHEGROVE, president of the St. Louis Southwestern, announces that his company is one of the owners of the "Voice of St. Louis," a co-operative radio-casting project recently established in St. Louis. The total cost of this 5,000-watt installation, including steel towers 200 ft. high, is \$120,000. The monthly budget to pay artists for their work is \$10,000. The Cotton Belt will be assigned each week two periods of one hour for broadcasting purposes. High-class musical and entertainment numbers will be interspersed with brief talks in some of which the resources of the Southwest are to be featured. This new station is ten times more powerful than any station heretofore operating in St. Louis.

Rate Hearing at Kansas City Continues

THE hearing before the Interstate Commerce Commission on the application of western carriers for an increase of 5 per cent in freight rates at Kansas City during the past week was given over to the presentation of evidence by shippers opposing the increases. Rex E. Willard, farm economist of the North Dakota Agricultural College, presented a schedule to show the disparity between the prices received by the farmers for their goods and the prices they have to pay. His evidence showed that Utah farmers were paid less for their production during the first ten months of this year than the country as a whole, and the amount was less than the level of non-agricultural commodities the farmers buy. He also showed that the farmer now pays an undue share of the rate burden. He testified that the value of farm products has not increased since 1913 relatively as much as freight rates. His figures showed that compared with the period between 1909 and 1914 the prices of non-agricultural commodities had increased 64 per cent at the end of the first 10 months of 1925, and farm products 44 per cent while the purchasing power of farm products had declined 12 per cent.

W. E. Grimes, professor of agricultural economics of the Kansas Agricultural College, testified that the prospects for the farmer in the next year do not carry the promise for betterment that existed in the last two years. He introduced an exhibit showing the increase in foreclosures in farm mortgages, particularly in Kansas. He said that in a survey of 6,000 farms it was found that nearly 30 per cent had gone into bankruptcy yearly since 1923.

J. A. Dickey, agricultural economist of the University of Arkansas, testified that the cotton farmer of the southwest, like the wheat grower of the middle west, and the dairyman of Wisconsin, already is so burdened with costs that he is in no position to shoulder the additional freight rates.

D. L. Kelley, rate expert of the South Dakota Board of Railroad Commissioners, presented a report on the grain rate conditions of the northwest, particularly in North Dakota and South Dakota. He said that the railroads would be hurting themselves by imposing further advances in their grain rates from the Dakotas, considering the unusually high rates they are already getting. If the railroads must have additional revenues from their grain traffic, the burden should be placed on the traffic moving from districts closer to the markets. He recommended that the variations existing at the state lines should be leveled off and that other adjustments should be made in the rates throughout the west so that freight burdens would be more evenly distributed.

Testimony for the sand, gravel and crushed stone interests was presented by Edmund Shaw, and Edwin Brooker. The latter's testimony tended to show that the specific increases in sand and gravel rates planned by the carriers were not in accord with the announced policy by the carriers for a horizontal increase of 5 per cent in the western district. The specific advances in sand and gravel would yield more than 5 per cent increases, being somewhere near an average of 7½ per cent.

E. M. Hendricks, traffic expert of the Board of Railroad Commissioners of North Dakota, said there should be adjustments of existing rates affecting the northwest territory before any horizontal advances were made. North Dakota shippers, he said, were at a disadvantage in competitive shipments into other territories.

J. S. Pyeatt, president of the Denver & Rio Grande Western, who testified at the hearing in Chicago, was cross-examined. He stated that there was a falling off in short distance passenger traffic and that low excursion rates were being tried as an antidote. He was also questioned on the relation of freight and passenger revenue to the return on investment.

Mining interests in the west were represented by A. G. Mackenzie, secretary of the Utah chapter of the American Mining Congress, who testified on the conditions of that industry. He said that there are few successful metal mines in the United States and of the 292 metal mines in Utah, only 11 operated with profit in 1924. Prices of metal, not including iron, have increased about 20 per cent over the price levels of 1913, but the cost of production has increased 65 per cent. The mining industry is in sharp competition with foreign metals which are produced more cheaply. From 25 to 30 per cent of the copper mines in the United States were closed because the domestic market is glutted with foreign copper.

H. W. Prickett, manager of the Utah Traffic Service Bureau stated that the decreasing passenger business and the menace of motor transportation on the short passenger hauls could be met best by the carriers through the establishment of a base passenger rate of 3 cents per mile, instead of the present base rate of 3.6 cents. He presented a series of tables and exhibits to show the gradual decline of passenger business and revenue on western roads as compared with the increase in both freight tonnage and revenue. When questioned as to what extent automobile busses were taking traffic from the railroads, he submitted schedules and rates applying on bus travel from Salt Lake City, Utah, to Portland, Oregon, from San Francisco to Los Angeles, and from Kansas City, Mo., to points on the Pacific Coast which showed the extent of motor travel. In support of his statement that passengers will travel if rates are reasonable, he called attention to the number of people which availed themselves of the holiday excursion rates established from Salt Lake and vicinity to Pacific coast points, saying that between 8,000 and 12,000 people traveled over the Union Pacific to Los Angeles on the one cent a mile rate. He said that the establishment of a reasonably low all-year passenger rate would meet the automobile competition.

Among others testifying were J. M. Hathaway a farmer, F. R. Jones, examiner in charge of liquidation for the Iowa banking department, who testified that 168 banks had failed in Iowa in the last five years, Henry Read, vice president of the First National Bank, Shenandoah, Iowa, and A. L. Urich, a labor commissioner at Des Moines, Iowa. The latter testified that there were between 8,000 and 9,000 unemployed persons in Des Moines and that the farm population was leaving the farms.

THE CHICAGO & NORTH WESTERN has carried 132,000,000 passengers during the past four years without loss of any passenger's life in a train accident. The total of employees killed and injured in 1925 was 21 per cent less than in the preceding year.

THE UNION PACIFIC, the Southern Pacific and the Pacific Electric will soon present to the Railroad Commission of California a plan, known as the "Titcomb Plan," which is a counter-proposal to that of the city of Los Angeles, Cal., proposing a union station to serve all the railways entering Los Angeles. The "Titcomb Plan" provides for the elimination of a number of grade crossings by means of elevated structures entering the present Southern Pacific and Pacific Electric stations and a new station for use by the Atchison, Topeka & Santa Fe on the site of its present terminal.

General News Department

The Dispatchers' Investment Company, lately organized by leading members of the American Train Dispatchers' Association, has opened an office in New York City, 300 Madison Avenue.

The Interstate Commerce Commission has extended from February 1 to July 18 the time for the fulfilment of its second train control order of January 14, 1924, in the case of the Chicago, Burlington & Quincy, the Lehigh Valley and the Norfolk & Western. It has also authorized the Burlington to make its installation between Pacific Junction, Ia., and Lincoln, Neb., in lieu of the territory specified in the order.

W. G. Lee announces that both the conductors' and the brakemen's brotherhoods have voted to demand higher wages. No amount is specified, but it is reported that the request will be for the rates which were in force prior to the reduction of 12 per cent which was made in 1921. The firemen's brotherhood voted last summer, at its convention in Detroit, to ask for higher wages, and a vote is now being taken, to be counted on February 1.

The Interstate Commerce Commission has extended the time for the fulfilment of its automatic train control orders to July 18 in the case of the Erie and the Richmond, Fredericksburg & Potomac, and has vacated its order of January 14, 1924, as it affects the Chicago & Erie. On petition of the Chesapeake & Ohio for an interpretation as to the limits of territory covered by the commission's orders the commission has ordered that it may make installations on that portion of its lines between Orange, Va., and Clifton Forge, Va.

Purchases and Stores Convention

It has been decided to hold the sessions of the annual meeting of Division VI—Purchases and Stores, American Railway Association, in the Vernon Room of the Haddon Hall Hotel in Atlantic City. As previously announced, this convention will be held on June 9, 10 and 11.

Wage Increases Granted

The Baltimore & Ohio has granted wage increases to clerical employees approximating \$300,000 a year. The appropriation for wage adjustments was agreed upon with the Brotherhood of Railroad and Steamship Clerks, Freight Handlers, Express and Station Employees. The apportionment has not yet been worked out.

The Illinois Central has granted an increase of one cent an hour to all shopmen.

Missouri Pacific Displays Horticultural and Agricultural Products

Orchard, farm and garden products raised in the lower Rio Grande valley, are being displayed by the Missouri Pacific at stations along its lines. The exhibit, carrying more than 3,000 separate specimens, has been placed in an especially equipped passenger car, which left the Rio Grande valley on December 13.

This company plans to send annual exhibit cars over the lines from the various states in which the system operates as a means of advertising the resources of its territory. It is planned later to exhibit products from Louisiana, after which those from Arkansas will be displayed.

Group Insurance on the Frisco

A total of \$302,067 has been paid to employees of the St. Louis-San Francisco and their beneficiaries under the group insurance program which was inaugurated on June 1, 1923. A total of 10,062 employees and officers are insured to the amount of \$19,542,680. Of these employees 5,680 are in the shop-craft group, insured for \$5,680,000; 1,718 in the supervisory group, insured

for \$9,603,680, and 2,664 in the clerks' group, insured for \$4,259,000.

On October 1, 1925, the company offered a plan of insurance to clerks, freight handlers, station and storehouse employees, who had been with it for at least three months. The plan provides life insurance limited to \$1,000 and \$2,000 for classes A and B respectively, with benefits payable monthly for total and permanent disability before the age of 60. The railroad shares the cost with the employees.

Fuel Economy Contest on D. L. & W.

James Sullivan, machinist, Kingston, Pa., enginehouse, was awarded the first prize of \$100 for having the best paper in the fuel economy contest recently held by the Delaware, Lackawanna & Western. Second and third prizes were awarded to Floyd E. Henneforth, fireman, Scranton division, and to H. F. Shaw, fireman, Buffalo division, respectively. A total of 126 papers were submitted by eligible employees in the contest. These papers were judged by a committee of five locomotive enginemen and five firemen, representing each of the five divisions of the railroad. The contest was open to enginemen, firemen, hostlers, coal chute operators, fire cleaners and other employees engaged in the handling of locomotive fuel in and around terminals. As each paper was received, it was given a number and the identity of the author was kept secret until after the awards had been made.

Missouri Pacific Improvements Program

In addition to the information that was published in the *Railway Age* of January 2 regarding the expenditures which the roads will make for improvements during 1926, further information has been received from the Missouri Pacific indicating that it plans to spend \$17,562,422 for improvements during the year, of which \$6,453,535 will go for new equipment, \$1,368,872 for improvements to existing equipment and the remainder for improvements to roadway and track. The most important items in the latter group are \$3,280,000 for additional second track, principally between St. Louis, Mo., and Jefferson City, \$1,176,250 for additional yard tracks and sidings, \$998,490 for bridges, trestles and culverts, \$653,290 for signal and interlocking equipment, \$248,000 for shop buildings, and \$400,000 for shop machinery. The expenditures for new equipment include the purchase of 25 locomotives, 2,000 freight cars, 22 passenger cars and 8 passenger motor cars.

Moffat Tunnel Leased

A contract for the rental of the Moffat railroad tunnel has been entered into by the Denver & Salt Lake which provides for a lease for the next 50 years at an annual rental sufficient to retire and pay interest on two-thirds of the tunnel bonds. The contract, based on the present outstanding tunnel bonds, aggregating \$9,220,000, obligates the railroad to a supplementary payment of \$1,000,000 if additional expenditures are necessary to complete the project. The original contract will run for fifty years and will cover the 46-year period during which the bonds will be retired, with a provision that the railroad may have an option for an additional 49 years at the close of the first 50 years.

Under the contract, the railroad will be liable for payments amounting to \$345,900 a year for the first 16 years; payments ranging from \$536,740 to \$329,660 during the following 20 years, and payments ranging from \$266,166 to \$187,416 for the next ten years.

The contract will be effective and payments due as soon as the tunnel is completed which will probably be on January 1, 1927, and not later than January 1, 1928, under the terms of the contract. In addition to the annual payments for interest and retirement of two-thirds of the tunnel bonded debt, including two-thirds of the annual maintenance charge of \$18,000, the railroad will be required under the contract to keep the tunnel in repair and to insure all inflammable parts of the structure at full value for protection of the district. Under the terms of the contract the rentals

on the tunnel are made a part of the operating charge of the railroad.

The Denver & Salt Lake Railway will be incorporated to take over the Denver & Salt Lake Railroad which is now in receivership. W. R. Freeman, receiver, will continue as president. Articles of incorporation have already been filed.

Atlantic City Exhibits

The Railway Supply Manufacturers' Association, through the office of Secretary-Treasurer J. D. Conway at Pittsburgh, has sent out its official circular No. 1, dated January 9, 1926. This includes a diagram of the exhibit space, with information as to the requirements for membership in the association and how to make application for exhibit space.

In addition to the exhibits on the Million Dollar Pier, there will be the usual track exhibits. Arrangements have also been made for the erection of a special new building directly opposite the Million Dollar Pier for machine tool exhibits. The building will be 400 ft. long by 50 ft. wide, with a center aisle. What was formerly Machinery Hall on the Million Dollar Pier will hereafter be known as Assembly Hall and will be utilized for miscellaneous exhibits. Information may be secured by addressing J. D. Conway, secretary-treasurer, 1841 Oliver Building, Pittsburgh, Pa.

Nominations for A. R. E. A. Offices

The following members of the American Railway Engineering Association have been nominated for office for the ensuing year:

For president, C. F. Felt, chief engineer system, Atchison, Topeka & Santa Fe.

For vice-president (one to be elected), W. D. Faucette, chief engineer, Seaboard Air Line; E. B. Katte, chief engineer electric traction, New York Central.

Secretary, E. H. Fritch.

Treasurer, G. H. Bremner.

Directors (three to be elected), L. W. Baldwin, president, Missouri Pacific; J. V. Hanna, chief engineer, Kansas City Terminal; W. T. Dorrance, designing engineer, New York, New Haven & Hartford; R. H. Ford, assistant chief engineer, Chicago, Rock Island & Pacific; F. W. Green, vice-president, St. Louis Southwestern; W. K. Hatt, head, School of Engineering, Purdue University; Frank Lee, engineer maintenance of way, Canadian Pacific; B. R. Leffler, engineer of bridges, New York Central and C. H. Stein, general manager, Central Railroad Company of New Jersey.

Nominating committee (five to be elected), L. B. Allen, superintendent maintenance of way, Chesapeake & Ohio; C. W. Baldridge, assistant engineer, Atchison, Topeka & Santa Fe; W. H. Hoyt, chief engineer, Duluth, Missabe & Northern; F. R. Layng, engineer of track, Bessemer & Lake Erie; E. R. Lewis, principal assistant engineer, Michigan Central; B. H. Mann, signal engineer, Missouri Pacific; F. E. Morrow, assistant chief engineer, Chicago & Western Indiana; J. W. Orrock, engineer of buildings, Canadian Pacific; H. J. Pfeifer, chief engineer, Terminal Railroad Association of St. Louis, and A. F. Robinson, bridge engineer, system, Atchison, Topeka & Santa Fe.

Railroad Policies of Canadian Parliament

Two subjects of deep interest to the railways are dealt with in the Speech from the Throne read by the Governor-General at Ottawa on January 8 at the opening of the Canadian Parliament. As the Throne Speech discloses the legislative program of the party in power that document usually is a fairly accurate indication.

One of the features is the direction to the Dominion Railway Board to inquire into means of moving more Canadian goods, particularly Western grain, through Atlantic Canadian ports. The paragraph in the speech reads: "In pursuance of the fixed policy of the government to encourage the movement of grain and other Canadian products through Canadian ports, the Board of Railway Commissioners has been instructed to include in the general rate investigation now in progress a special inquiry into the causes of diversion of Canadian grain and other products through other than Canadian ports, and to take such action under the Railway Act as it may deem efficient to ensure as far as possible the utilization of Canadian ports for Canadian traffic."

Progressive members of the House came to Ottawa organized to fight for a lower grain rate eastbound over the National Transcontinental from Winnipeg and other points to Quebec, St. John and Halifax. In fact, some of them will demand in the House the extension of the Crow's Nest Pass rate eastbound now in force to the head of the Lakes. The Western bloc will get the active support of members from the Maritime provinces, no matter what is the party color of these latter, as for some months these have been making a loud demand for a real grain movement through their ports in the winter. Halifax has a new elevator for this purpose.

Supplementing this move of the government the speech also reveals the proposal to meet Maritime discontent in regard to the former Intercolonial Railway, now a part of the Canadian National. The speech says: "With a view to affording such remedies as may appear to be practical and appropriate, the government also propose to appoint a Royal Commission to inquire fully into the claims that the rights of the Maritime provinces in regard to the operation of the Intercolonial Railway have not been observed, and that in regard to transportation, immigration and other economic factors these provinces have suffered prejudicially in their position under confederation."

Immediate completion of the Hudson Bay Railway is also promised by the Liberal government in the speech. It was also promised by Mr. Meighen, leader of the Conservatives during the recent election campaign, both parties knowing that this is one of the most attractive offers they can extend to the Progressive bloc. The Western progressives, while less than half their numbers in the last Parliament, exert an even stronger influence with the two major parties so nearly balanced, as the latter parties are making every conceivable bid for Progressive support. Freight rates and other urgent matters will, therefore, be "in the air" until the vexed question of who is to govern at Ottawa is settled.

The Tie Producers' Association

The National Association of Railroad Tie Producers will hold its annual convention at the Hotel Cleveland, Cleveland, O., on January 28 and 29. The program for the convention is as follows:

Thursday Afternoon, January 28

Convention called to order at 2 p. m. by Howard Andrews, president.

Address by John J. Bernet, president, N. Y., C. & St. L.

Reports of officers.

Address on The Business Outlook, by John C. Howell, chief of commodity department, Brookmire Economic Service, New York.

Address on The Tie Siding, How and Where to Sell It, by Wilson Compton, secretary-manager, National Lumber Manufacturers' Association, Washington, D. C.

Reports of committees on Finance, Membership, Publicity and Transportation.

Reports on conditions in the tie industry by the district officers.

Report of sub-committee on Ties, American Engineering Standards Committee, by E. E. Pershall, representative.

Thursday Evening, 6:30

Annual dinner with address by Col. W. B. Greeley, forester, United States Department of Agriculture, Washington, D. C.

Friday, January 29, 10 A. M.

Address on The Importance of the Tie Industry in our Program of Forest Thrift, by R. D. Garver, assistant chief, Section of Industrial Investigations, Forest Products Laboratory, Madison, Wis.

Address on Cross Ties in Europe, by Dr. Hermann von Schrenk, consulting timber engineer, St. Louis, Mo.

Address on Tie Specifications and the Changes They Have Wrought, by E. R. Ross, Marsh & Truman Lumber Co., Chicago.

Friday, 2 P. M.

Address on The Effect of Railroad Consolidations, by E. T. Howson, editor Railway Engineering and Maintenance, Chicago.

Address on Future Cross Tie Requirements of the Railroads, by J. H. Waterman, superintendent of timber preservation, C., B. & Q., Galesburg, Ill.

Closing business.

The Wood Preservers' Association

The American Wood Preservers' Association will hold its twenty-second annual convention at the Hotel Cleveland, Cleveland, O., on January 26-28. The program is as follows:

Tuesday Morning

Opening exercises.
Report of secretary-treasurer.
President's address.
Report of Publications Committee.....
E. J. Stocking (Secretary, A. W. P. A.), Chairman
Report of Committee on Revision of Manual.....
John Foley (Forester, Penna.), Chairman
Address: Wood Preservation in Relation to Forestry.....
Aldo Leopold, assistant director Forest Products Laboratory, Madison, Wis.

Tuesday Afternoon

Address.....C. E. Denney,
vice-president and general manager, N. Y. C. & St. L.
Report of Committee 4—Preservatives.....L. C. Drefahl,
(Grasselli Chemical Company), chairman
Supplementary reports:
"A Method of Calculating Viscosity of Mixtures of
Creosote and Petroleum".....E. Bateman,
Forest Products Laboratory, Madison, Wis.,
and Mr. Baechler
"Two Visual Methods for Testing the Penetration of
Sodium Fluoride in Treated Wood".....
E. Bateman and C. Henningsen
Address: Beta Naphthol as Wood Preservative.....
Galen Wood, chemical engineer, Philadelphia, Pa.
Report of Committee 5-1—Treatment of Ties.....
W. E. Jackson, superintendent, Texas Tie &
Lumber Preserving Co., Somerville, Tex., chairman

Wednesday Morning

Report of Committee 5-1-1—Treatment of Fir Ties.....
M. M. Rabourn, superintendent, timber treating
plant, Union Pacific, Laramie, Wyo., chairman
Report of Committee 5-2-1—Treatment of Car Lumber.....
C. M. Taylor (superintendent treating plant, Central
of New Jersey, Port Reading, N. J.) chairman
Report of Committee 5-4-1—Treatment of Fir Piling.....
H. E. Horrocks (manager, Pacific Creosoting
Company, Seattle, Wash.), chairman
Address: The Relationship of the Treating and Signal De-
partments.....By Thos. S. Stevens,
signal engineer, Atchison, Topeka & Santa Fe
Address: The Effect of Temperature and Viscosity of Pre-
servative Oils on Penetration and Absorption.....
J. D. McLean, Forest Products Laboratory, Madison, Wis.

Wednesday Afternoon

Address: Does the Wood Preserving Industry Need Publicity?
E. T. Howson, western editor, *Railway Age*
Report of Service Bureau Board.....
R. S. Manley (president, Texas Creosoting
Company, Orange, Tex.), chairman
Address: Wood Preservation and the Forestry Schools.....
Reuben W. Smith, assistant professor, New
York College of Forestry, Syracuse, N. Y.
Report of Committee 5-2-2—Non-Pressure Treatment of
Poles.....J. D. Burnes
(inspector, Page & Hill Co., St. Paul, Minn.), chairman
Report of Committee 5-9—Inspection.....
F. C. Krell (assistant forester, Pennsylvania
System, Philadelphia, Pa.), chairman
Report of Committee 7-1—Tie Service Records.....
Z. M. Briggs (assistant engineer maintenance,
Pennsylvania, Pittsburgh, Pa.), chairman

Thursday Morning

Report of Committee 7-9—Utilization and Service of Treated
Posts.....Wm. Bell (manager, Long-Bell
Lumber Company, Shreveport, La.), chairman
Report of Committee 8-1—Steam Treatments.....
Geo. M. Hunt (in charge of wood preservation,
Forest Products Laboratory, Madison, Wis.), chairman
Closing business.

Traffic News

The passenger department officers of the Denver & Rio Grande Western and the Western Pacific at Los Angeles have been moved to 641 South Olive street.

The Missouri-Kansas-Texas has established fourth morning delivery for through merchandise package car service between St. Louis, Mo., and Galveston, Tex.

The Sunshine Special of the Texas & Pacific left Dallas, Tex., on December 30 with 19 steel cars. At Longview four more cars (sleepers) from San Antonio, Houston and Galveston, were attached, making a total of 23 cars. The train was hauled by the first of the 900 type locomotives recently purchased by the Texas & Pacific.

Great Northern Will Operate

Home Seekers' Excursions

The Great Northern will operate a series of round trip home seekers' excursions during 1926. The rate of one fare plus \$2 for the round trip will be offered on the first and third Tuesdays of each month from February to December, inclusive. The final return limit will be 21 days from the date of sale and the fares will apply from St. Paul, Minn., Minneapolis, Duluth, Superior, Wis., to destinations in western and northern Minnesota, all points in North Dakota, Montana, Idaho, and eastern Washington and points in Oregon east of the Cascade mountains. During 1925 the number of home seekers' tickets sold was 40 per cent greater than in 1924.

New Haven Plans Extensive Co-ordination

of Railroad and Bus Traffic

The New York, New Haven & Hartford announces that interchange tickets, good for travel either on its steam railroad, its bus lines, or, if passengers desire it, on its trolley system, are soon to be offered to the public, and that time-tables are to be revised, where necessary, so that train and bus service can be co-ordinated.

The company has charters for 14 bus routes to be operated as auxiliaries of the steam lines in Connecticut, Rhode Island and Massachusetts and the prices of bus line tickets will be the same as for trains.

Vice-president E. G. Buckland, making these announcements, says:

"If a traveler should purchase a ticket in New York for New Haven or any other town on the main line, he is entitled to be transported to his destination as rapidly as he wishes to go either by rail or by omnibus, and at the same rate of fare. Our branch line rail service costs us in some cases \$1.25 per mile, while our revenue on the same line is only 35 cents a mile.

"The institution of buses may not increase our gross revenue because our rates of fare will be the same as before, but it will cut down our expenses and will greatly increase our net income. The adoption of the bus system will provide better service than has been recently possible by train without increase of cost."

The fourteen lines on which buses will be operated are:

Danbury and South Norwalk; Hartford and Suffield; Willimantic and Woonsocket; Willimantic and North Grosvenordale; New Haven to Hartford; Hartford to Broadbrook; Willimantic to Norwich; New London to Norwich; Fall River to Taunton; Fitchburg to Worcester; Providence to Plainville; Providence to Bristol (R. I.); Providence to Worcester, and Canton Junction, Mass., to Stoughton.

Edward J. Pearson, president of the road, has been elected president of the system's trolley company. Mr. Buckland was chosen vice-president. The directors are: E. J. Pearson, E. G. Buckland, Arthur T. Hadley, New Haven; M. B. Lasher, Bridgeport; F. P. Maxwell, Rockville; Edward Milligan, Hartford; Harris Whittlemore, Naugatuck; Benjamin Campbell, N. M. Rice, W. C. Noyes, Lyme; Charles Cheney, Manchester; L. M. Daggett, New Haven; Charles Sanford, Bridgeport, and J. K. Punderford, New Haven.

Commission and Court News

Interstate Commerce Commission

Express Rates on Money and

Bullion Found Reasonable

The Interstate Commerce Commission has dismissed a complaint filed by the Federal Reserve Bank of New York against the American Railway Express Company, in support of which the other federal reserve banks intervened, and has found that the express rates, rules and practices for the transportation of gold coin, silver coin, paper currency, gold bullion, silver bullion and securities between interstate points are not unreasonable or otherwise unlawful.

Kansas City Terminal Contract

The Interstate Commerce Commission has rendered its decision on the petition of the Missouri-Kansas-Texas for an order according it the right to use, upon compensation determined wholly on a user basis, the passenger and freight facilities of the Kansas City Terminal, and also upon the intervening petitions filed by the Alton, the Great Western, the Kansas City Southern, the Frisco, the St. Paul and the Wabash, for similar relief from the provisions of the operating agreement by which the twelve lines using the terminal were to divide equally the interest and taxes while paying the operating expenses on a user basis.

The petitions of the interveners, referred to as the "small users" of the terminal facilities, are dismissed on the ground that they are not within the contemplation of section 3 of the interstate commerce act and that as to them the commission is not empowered to grant the relief sought. As to the Missouri-Kansas-Texas the commission holds that if, in the cause now pending in the federal courts, it shall finally be adjudged not to be bound by the operating contract, further proceedings may be had looking to the entry of an order according the petitioner a right of user. However the commission says that the contract division of interest and taxes has not been shown to be unduly prejudicial or preferential or unjustly discriminatory. The M.-K.-T., since its reorganization, has elected not to become one of the proprietors of the terminal company and the other small users urged a division of the charges on a user basis. The commission says it would seem to be an admissible inference from the record that but for the greatly increased cost of the terminals over the original estimates the present controversy would not have arisen, but it suggests strongly the advisability of a reexamination by the respective participating carriers of terminal arrangements which have been developed through past decades, including division of capital charges and adjustment of property interests.

Commissioner Eastman, in a dissenting opinion, holds that the record justifies a finding that the arrangement now in effect gives an undue advantage to the larger users and that the companies should then be left free to effect, if they can, a voluntary adjustment. Commissioners McChord and Campbell also dissented.

State Commissions

Upon the request of the counsel for the interested parties, the hearing on the application of the Chicago & Illinois Midland, the Springfield, Havana & Peoria, and the Illinois Central, for authority to operate the Chicago, Peoria & St. Louis from Springfield, Ill., to Pekin, was continued by the Illinois Commerce Commission at a hearing on January 6. No new date was set for further hearings pending action by the Interstate Commerce Commission.

Grade-Crossing Elimination Postponed

Upon the agreement of the New York Central to install automatic flashing signals at the Undercliff street grade crossing on the Putnam division, in Yonkers, the New York State Public Service Commission has issued an order holding in abeyance the

elimination of this crossing. Traffic over the crossing is relatively light and the present order is issued in recognition of the view that the signals will afford adequate protection. The order provides, however, that the matter may be reopened in the future by the railroad company, or the municipality, or by the commission.

Rail Failures in New York State

The fifth annual report of the New York State Public Service Commission, presented to the legislature on January 11, contains tables showing totals for each railroad company, summarizing the records of rail failures during the year ending June 30, 1925. The total number of such failures was 3,040, a slight decrease from the previous year; failures from internal transverse fissures, 390; an increase of about six per cent over the previous year. The tables show failures for 9,100 miles of main track; and give for each road the proportion of transverse fissures to the total failures from all causes.

Grade Crossings in New York

The New York State Public Service Commission has made a survey of all highway grade crossings in the state, and a summary, with estimated costs of elimination, is contained in the annual report of the commission which was published this week. The statement shows a total of 7,504 crossings of highways with main tracks, and the total cost of eliminating all of them is estimated at \$603,895,000. In addition there are 791 crossings of highways with sidings or spurs, making a grand total of 8,295 crossings.

The commission has divided the crossings into three classifications: A, B, and C, based on the character of the railroad and of the highway, and the extent of the traffic upon each, Class A crossings being deemed the most important. The three classes appear as follows:

	Crossings	Estimated cost
Class A.....	1,973	\$281,810,000
Class B.....	2,548	166,760,000
Class C.....	2,984	155,325,000
	7,504	\$603,895,000
Other than main tracks.....	791	.....
	8,295	.....

During the past year 39 grade crossings have been eliminated in the state and 14 projects are under construction; also there are ten additional projects for which orders have been issued.

The report contains a table showing the number of persons killed and injured at grade crossings in New York State in the year ending June 30; total killed, 117; total injured, 497; as compared with 160 killed and 535 injured in the year preceding. The number of accidents at crossings, 729, is seven per cent less than in the preceding year which, says the commission, may be said to be hopeful, especially in view of the large increase of motor vehicles in use. (Of the persons killed four are classed under the head of "other vehicles"; and in the previous year 15 were thus classed.)

The report says that the recent order of the commission prescribing uniform practice in the installation of automatic signals for the warning of travelers at crossings has been followed by the installation of these signals by the railroads at a rapid rate. The commission believes that these signals will be the means of saving a large number of lives.

Personnel of Commissions

The Senate on January 13 confirmed the appointment of Richard V. Taylor, formerly vice-president and general manager of the Mobile & Ohio and now commissioner of the city of Mobile, Ala., as a member of the Interstate Commerce Commission, to succeed C. C. McChord, resigned.

Eastman Elected Chairman

Pursuant to the policy adopted in 1911, that the term of office of the chairman of the Interstate Commerce Commission shall be filled from year to year in the order of seniority of service, Commissioner Joseph B. Eastman has been unanimously elected chairman to serve from January 1, 1926, for the ensuing year.

Equipment and Supplies

Locomotives

THE GREAT NORTHERN has ordered from the General American Car Company 17 locomotive tenders each with a capacity of 21,500 gal. of water and 24 tons of coal.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 5 electric passenger locomotives and 3 electric switching locomotives from the General Electric Company.

THE FLORIDA EAST COAST has ordered 10 Mountain type and 6 switching locomotives from the American Locomotive Company. This company was reported in the *Railway Age* of December 12 as inquiring for 50 locomotives.

Freight Cars

SWIFT & Co., Chicago, are inquiring for 300 underframes for refrigerator cars.

THE VALLEY CAMP COAL COMPANY is inquiring for from 30 to 40 hopper cars of 70 tons' capacity.

THE BUFFALO & SUSQUEHANNA contemplates putting steel underframes under 200 wooden box cars.

THE CHICAGO & NORTH WESTERN has ordered 250 steel underframes from the Pressed Steel Car Company.

THE NEVADA CONSOLIDATED COPPER COMPANY is inquiring for 10 Ingoldsby hopper cars of 70 tons' capacity.

THE ALLIS CHALMERS MANUFACTURING COMPANY is inquiring for four flat cars and four composite gondola cars of 40 tons' capacity.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS is now inquiring for 100 or more 55-ton hopper cars and 100 or more 70-ton hopper cars.

THE NEW YORK CENTRAL is having new bodies placed on old trucks to 500 hopper cars of 55 tons' capacity at the East Rochester, N. Y. shops.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 25 caboose cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of November 21.

THE ANACONDA COPPER MINING COMPANY has ordered 20 air dump cars of 30 cu. yd. capacity from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of November 21.

THE FLORIDA EAST COAST has ordered 40 caboose cars from the Mount Vernon Car Manufacturing Company. In the *Railway Age* of December 12 this company was reported as inquiring for 50 caboose cars.

THE BALTIMORE & OHIO has ordered 1,000 hopper cars of 70 tons' capacity from the Standard Steel Car Company and 1,000 from the Bethlehem Steel Company. In the *Railway Age* of December 26 mention was made that this company contemplated the purchase of 2,000 hopper cars.

THE UNION PACIFIC has placed orders for 700 automobile cars with the General American Car Company, 300 automobile cars with the Pennsylvania Car Company, 500 ballast cars with the Rodger Ballast Car Company and 500 Enterprize ballast cars with the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of December 12.

Passenger Cars

THE GREAT NORTHERN has ordered 6 baggage gas-electric motor cars from the Electro-Motive Company.

THE NEW YORK, WESTCHESTER & BOSTON contemplates coming into the market soon for 20 multiple unit cars.

THE CENTRAL OF NEW JERSEY is inquiring for 25 coaches, 5 combination passenger and baggage cars and 5 baggage express cars.

THE CHICAGO & NORTH WESTERN has ordered 3 combination mail baggage and passenger gas-electric cars, from the Electro-Motive Company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 12 multiple unit motor cars and 15 multiple unit trailer cars from the Osgood-Bradley Car Company.

THE BROOKLYN MANHATTAN TRANSIT COMPANY is inquiring for 201 articulated subway car bodies and trucks (67 triplex articulated units each upon 4 trucks). In the *Railway Age* of December 26 mention was made that the company expected to ask for bids in the near future for this equipment.

THE UNION PACIFIC has ordered 10 baggage cars, 5 horse-baggage cars and 2 baggage and mail cars from the American Car & Foundry Co. and 15 coach smoking cars, 10 observation cars and 5 dining cars from the Pullman Car & Manufacturing Co. Inquiry for this equipment was reported in the *Railway Age*, December 19.

THE BALTIMORE & OHIO has ordered 25 coaches and 15 combination baggage and mail cars from the Pullman Car & Manufacturing Corporation; 15 baggage cars from the Bethlehem Shipbuilding Corporation, and 10 horse express cars, 3 postal cars and 5 mail compartment cars from the American Car & Foundry Company. The company was reported in the *Railway Age* of December 26 as expecting to ask for bids for this equipment.

Signaling

THE SEABOARD AIR LINE has contracted with the Union Switch & Signal Company for the installation of six interlockings in South Carolina, Georgia, and Florida as follows: Denmark, S. C., 16 working mechanical levers, 11 electric. This plant is at the crossings with the Atlantic Coast Line and the Southern.—Fairfax, S. C., 19 working mechanical levers, six electric.—Everett, Ga., nine working mechanical levers, three electric.—Mabel, Fla., eight working mechanical levers, three electric, to cover the crossing with the Atlantic Coast Line.—Winterhaven, Fla., 12 working mechanical levers, six electric. At all of the foregoing plants track circuit locking will be provided; derails in sidings will be operated by switch-and-lock movements and all signals on the S. A. L. tracks will be color-light. On the intersecting roads, semaphores, style "S," will be used.—At Thelma, Ga., a mechanical interlocking, eight working levers is to be installed at the crossing of the Atlanta, Birmingham & Atlantic. The four distant signals at this plant will be power operated, style "S," low voltage.

LOCOMOTIVE REPAIR SITUATION

Date, 1925	No. locomotives on line	No. serviceable	No. stored serviceable	No. req. classified repairs	Per cent	No. req. running repairs	Per cent	Total req. repairs	Per cent
January 1.....	64,384	53,118	4,849	5,927	9.2	5,339	8.3	11,266	17.5
February 1.....	64,308	52,994	4,220	6,143	9.6	5,171	8.0	11,314	17.6
March 1.....	64,255	52,851	4,988	6,217	9.7	5,187	8.0	11,404	17.7
April 1.....	64,230	52,619	6,241	6,345	9.9	5,266	8.2	11,611	18.1
May 1.....	64,034	52,933	6,697	6,082	9.5	5,019	7.8	11,101	17.3
June 1.....	63,976	53,074	6,618	5,916	9.2	4,986	7.8	10,902	17.0
July 1.....	63,942	53,025	6,600	5,832	9.1	5,085	8.0	10,917	17.1
August 1.....	63,921	53,263	6,313	5,740	9.0	4,918	7.7	10,658	16.7
September 1.....	63,812	53,261	5,902	5,514	8.6	5,037	7.9	10,551	16.5
October 1.....	63,701	53,058	5,337	5,552	8.7	5,091	8.0	10,643	16.7
November 1.....	63,604	53,371	4,450	5,387	8.5	4,846	7.6	10,233	16.1
December 1.....	63,368	52,643	4,656	5,370	8.5	5,355	8.4	10,725	16.9

Data from Car Service Division reports.

Supply Trade News

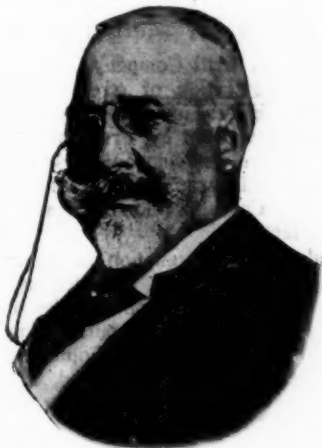
B. J. Minnier, vice-president in charge of production of the **New York Air Brake Company** at Watertown, N. Y., has resigned.

The **Okonite Company**, Passaic, N. J., and **The Okonite-Callender Cable Co., Inc.**, have opened a new branch office in the Hoge building, corner Second avenue and Cherry street, Seattle, Wash.

W. O. Jacquette, eastern sales manager of the **Pullman Car & Manufacturing Corporation** at New York, in order to take a much needed rest has tendered his resignation to take effect on the appointment of his successor.

Lewis E. Wallace, assistant district sales manager of the **Youngstown Sheet & Tube Company**, with headquarters at Cleveland, O., has been appointed manager of the Detroit office, to succeed **G. W. Bostwick**, resigned.

Charles Albert Gould, founder of the **Gould Coupler Company** and the **Gould Storage Battery Company**, died on January 6 at his home in New York City. Mr. Gould was a pioneer in the development of automatic car couplers, electric train lighting, vestibule passenger cars and other railroad devices. He was born in Batavia, N. Y., on January 13, 1849. He became an accountant in Buffalo about 1869 and subsequently served as postmaster of Buffalo and collector of customs. About 1880 he organized and became president of **Gould & Stimson** and in 1890 this was developed into the **Gould Coupler Company**. He remained at the head of this organization until January 1, 1925, when he disposed of his interest in the business to serve as president of the **Gould Realty Company** and the **Gould Securities Company**.



Charles A. Gould

K. E. Keiling, who has served for some time in the office of the purchasing agent of the **New York Central**, has been appointed purchasing agent of the **New York Air Brake Company**, with headquarters at New York, succeeding **W. R. Brown**.

George H. Charls, vice-president and general manager of the **United Alloy Steel Corporation**, Canton, O., has been elected president, to succeed **E. A. Langenbach**, who has been elected chairman of the board. **L. G. Pritz**, vice-president in charge of operations, will succeed Mr. Charls.

The **Earle Gear & Machine Company**, Philadelphia, Pa., has transferred its designs, patterns, patents and good will covering the **Earle centrifugal pump** to the **Aldrich Pump Company**, Allentown, Pa. The **Earle Company** will, however, continue the manufacture and sale of its line of cut gears, movable bridge operating machinery, cold metal saws and other special equipment.

F. O. Paul has been appointed service manager of the automotive car division of the **J. G. Brill Company**, Philadelphia, Pa. For several years Mr. Paul was connected with the sales and service departments of the **Timken Roller Bearing Company**, Canton, Ohio, and was previously affiliated with the **International Motor Company** as chief inspector at its New Brunswick, N. J., plant.

J. H. Redhead, formerly assistant to vice-president and assistant manager of sales of the **National Malleable & Steel Castings Company**, Cleveland, Ohio, who left that company after a service of about twenty years and for a short time was connected with the banking business in Cleveland, has been elected vice-president and general manager of the **Columbus Malleable Iron Company**, with headquarters at Columbus.

M. A. Herald has resigned as sales representative of the **Standard Tank Car Company**, Sharon, Pa., and has organized **The United Car & Equipment Company**, with offices in the Westinghouse building, Pittsburgh, Pa. In addition to operating the **United Tank Line**, the **United Car & Equipment Company** will be the representative of the **Union Draft Gear Company**, the **Universal Draft Gear Attachment Company** and other manufacturers, dealing in new and second-hand railroad cars and equipment.

The **Stuebing Truck Company**, of Cincinnati, Ohio, and the **Cowan Truck Company**, of Holyoke, Mass., manufacturers of well-known lift trucks since 1912, were merged recently under the name of the **Stuebing-Cowan Company**. While the directing headquarters of the new company will be at Cincinnati, Ohio, the **Cowan truck division** will continue its operation at Holyoke, Mass. Sales offices will be maintained in all of the principal cities with stocks located at convenient points to provide prompt service.

The **American Creosote Works**, New Orleans, La., has completed its plans to purchase the **Atlantic Creosoting & Wood Preserving Works** at Norfolk, Va. The company has acquired a large waterfront property fronting on deep water and adjacent to the **Portsmouth Navy Yards**. Plans are being made to erect a large and modern creosoting plant to take care of eastern business. **W. H. Wales**, formerly president of the **Atlantic Creosoting & Wood Preserving Works** will be in charge and the entire personnel of the **Atlantic Creosoting & Wood Preserving Works** will be retained. This plant will be operated under the management of the **American Creosoting Works** connection, the **Savannah Creosoting Company**.

A. S. Durant, formerly manager of the department of the Americas, has been made a vice-president of the **International General Electric Company** in charge of commercial relations, with headquarters in New York; **James C. Ryan**, formerly sales manager of the department of the Far East, has been appointed general sales manager with responsibility for all sales of apparatus and supplies; **E. A. Baldwin**, formerly manager of the department of Europe, has been appointed manager of the **Schenectady office**, with general supervision of the **Schenectady office** and responsibility for engineering and contract relations; **W. J. Edmonds**, controller of the company, with headquarters in New York, in addition to his former duties, now has executive direction of the activities, with the exception of sales effort, of the **International foreign sales companies**.

S. L. Nicholson, assistant to the vice-president of the **Westinghouse Electric & Manufacturing Company**, East Pittsburgh, Pa., has been elected acting vice-president. Mr. Nicholson was born in Philadelphia and began his electrical career in 1887 being associated with various companies from that date until 1898 when he joined the **Westinghouse Company**. In 1909 Mr. Nicholson was made sales manager of the **Westinghouse Company** and held that position until 1917, when he was made assistant to the vice-president. He assisted in the formation of and was the first president of the **American Association of Electric Motor Manufacturers**, which is now known as the **Electric Power Club**, and he assisted in the formation of the **American Gear Manufacturers' Association** and the **Stoker Manufacturers' Association**. He served also as chairman of the **Electrical Manufacturers' Council**.

The **Lake States General Electric Supply Company, Inc.**, has been organized with an issued capital of 20,000 shares of no par value common stock. It will carry on business as a wholesale distributor of electrical supplies in Ohio, Indiana and Michigan. It has taken over the equipment and merchandise of the following companies and will retain their personnel: **Erner & Hopkins Company**, Columbus, Ohio; **Indianapolis Electric Supply Company**, Indianapolis, Ind.; **Crescent City**

Electric Company, Evansville, Ind.; A. T. Knowlson Company, Detroit, Mich.; Post-Glover Electric Company, Cincinnati, Ohio (except factory at Ludlow which will be conducted under the old name as heretofore), Republic Electric Company, Cleveland and Akron, Ohio; W. G. Nagel Electric Company, Toledo, Ohio (except manufacturing operations which will be conducted under the old name as heretofore at its Hamilton street factory). The above companies have all been wholesale distributors of General Electric merchandise. The object in forming this new corporation is to provide a more effective form of organization and to give better service to customers. The General Electric Company will have a substantial interest in this new corporation. The officers and directors are as follows: W. G. Nagel, Toledo, Ohio, chairman of board; M. A. Pixley, Columbus, Ohio, president; W. G. Clarke, Detroit, Mich., L. Griesser, Cleveland, Ohio, H. E. Rasmussen, Indianapolis, Ind., and F. D. Van Winkle, Cincinnati Ohio, are vice-presidents; J. T. Dunnick, Columbus, Ohio, is secretary-treasurer, and R. N. Evans, Toledo, Ohio, is assistant secretary and assistant treasurer. Messrs. Nagel, Pixley, Clarke, Griesser and Van Winkle are also directors; the other directors are: R. P. Oblinger, Indianapolis; F. R. Huntington, Columbus; W. H. Colman, Chicago; H. C. Houck, Bridgeport, Conn.; L. U. Murray, Cleveland, and L. M. Nichols, Bridgeport, Conn.

G. N. DeGuire, whose appointment as assistant to the president of the Locomotive Firebox Company, Chicago, was announced in the *Railway Age* of January 9, was born in Appleton, Wis., on March 31, 1884. He entered railway service in 1902 as a locomotive fireman on the Chicago & North Western and in 1906 was promoted to engineman. For ten years thereafter he held the positions of locomotive fireman or engineman in accordance with the demands of the service with the exception of three years which were devoted to making a study of locomotive and car construction as well as shop, enginehouse and railroad operation in general in various parts of the United States. In December, 1916, he received a civil service appointment as inspector of locomotives with the Interstate Commerce Commission, which position he held until January 1, 1918, when he resigned to enter the service of the United States Railroad Administration as supervisor of railroad equipment. On June 1, 1918, he was promoted to general supervisor of equipment for all lines east of Chicago, and on February 1, 1919, he was given jurisdiction over all lines under federal control. At the termination of federal control he was appointed assistant manager, department of equipment, Division of Liquidation Claims, of the United States Railroad Administration. On July 1, 1923, he was promoted to the position of manager of the department, which position he held until the work of the department was concluded. During the past two years he has been located in New York, handling financial matters. He resigned as president of the Premier Guaranteed Mortgage Bond Corporation to enter the employ of the Locomotive Firebox Company.

Following the co-ordination of the engineering, manufacturing and sales departments, as it relates specifically to the steam power equipment manufactured by the Westinghouse Electric & Manufacturing Company, at the South Philadelphia and Attica works, H. T. Herr, resident vice-president in charge of these activities, announces the following appointments: Howell Van Blarcom has been appointed manager of the sales department with R. E. Carothers as assistant manager. The large turbine sales section of the South Philadelphia works will be conducted with A. H. Ganshird as manager. This section will

handle all matters pertaining to straight reaction and combination turbine and turbo-generator units for land and marine service. The small turbine section will be in charge of C. G. Ong, while P. L. Fetzner will be manager of the condenser section. Howell Van Blarcom began his Westinghouse career in 1904 when he joined the engineering department at East Pittsburgh. In 1907 he was made manager of the Pittsburgh district of the Westinghouse Machine Company, remaining in that capacity until the merger of the various Westinghouse organizations into the Westinghouse Electric & Manufacturing Company, in June, 1917. In January, 1918, he assumed the duties of assistant to manager of the power sales department, with headquarters at East Pittsburgh, until the opening of the South Philadelphia works, in the early part of 1918, when he was transferred to the works at Philadelphia. R. E. Carothers entered the employ of the Westinghouse Company in 1903 as an apprentice, and was gradually promoted until 1915, when he was made assistant district engineer in Chicago. The following year he was transferred to the Atlanta office as sales engineer, remaining there until he was transferred to the power department at East Pittsburgh in 1919. Mr. Carothers on June 1, 1922, was appointed manager of the steam division and served in that capacity until he went to the South Philadelphia works. Mr. Ganshird, prior to his appointment at Philadelphia, was in the power department at East Pittsburgh for many years, as was also Mr. Fetzner, while Mr. Ong of the Westinghouse service was for many years connected with the industrial division in Boston.



G. N. DeGuire

Plans for Merger of Equipment Builders

The J. G. Brill Company, Philadelphia, Pa., for years engaged in the construction of street railway equipment, is one of the principal figures in a combination of transportation equipment builders announced by President Samuel M. Curwen. The combination involves companies having total assets of \$150,000,000 and outstanding capital stock issues of nearly \$75,000,000, with the American Car and Foundry Company, of New Jersey, the dominating factor.

Under some designation preserving the name Brill, which has been associated with Philadelphia manufacturing history since 1869, a new corporation will be organized in Delaware to take over a majority of the outstanding stock of the Brill Company and the American Car & Foundry Motors Company, a Delaware corporation, recently organized, as was reported in the *Railway Age* of January 9. The latter corporation owns all the capital stock of the Hall-Scott Motor Car Company, of California, and more than 90 per cent of the capital stock of the Fageol Motors Company, of Ohio. The American Car & Foundry Company, of New Jersey, manufacturers of railroad equipment, will own a majority of the voting stock of the new corporation.

More than 60 per cent of the common and preferred stocks of the Brill Company have been deposited under the plan, thereby making it operative. The plan provides that the new organization will have 7 per cent cumulative preferred stock of about \$4,000,000, par \$100; 225,000 shares of no par Class A stock and 400,000 shares of Class B stock.

There are outstanding 48,102 shares of Brill common stock, a majority of which is held by Brill estates, and 45,800 shares of preferred stock. Holders of these shares can exchange them on the following basis:

Preferred stock: One and one-tenth shares of 7 per cent cumulative preferred stock of the new corporation, or \$110 in cash, for each share held.

Common stock: One share of the 7 per cent cumulative preferred stock and one share of the Class B stock of the new corporation, or two shares of the Class A and one share of the Class B stock of the new corporation, or \$125 in cash for each share held.

Last recorded sales of Brill common were at \$136 a share and the preferred at \$105.50.

Under the plan, the new company will acquire more than 50 per cent of the preferred and approximately 67 per cent of the common stock outstanding of the American Car & Foundry Motors Company, including all the stock owned or controlled by the American Car & Foundry Company, of New Jersey. The latter concern, by the purchase or underwriting of such amount of the Class A shares of the new corporation as may be necessary, will

provide the funds required for the purposes of the merger plan and additional working capital.

The American Car & Foundry Company will receive \$1,500,000 in cash and all of the Class B shares of the new corporation not required for the purposes of exchange for stock of the Brill Company. Class B shares alone have voting rights.

The Hall-Scott Motor Car Company manufactures gasoline motors used in motorbuses, trucks, marine equipment and airplanes. The Fageol Motors Company manufactures the Fageol bus. The American Car & Foundry Company, of New Jersey, represents a consolidation of eighteen companies engaged in the manufacture and sale of railway passenger and freight train cars for domestic and foreign service, and the manufacture of steel and iron parts. It has plants at various places in the United States. In addition to being a large builder of street and elevated railway passenger equipment and car trucks, the Brill Company also has engaged in recent years in the building of engines and motorbuses and gasoline and gasoline-electric passenger cars for the steam railroads.

President Curwen, of the Brill Company, who was active with William H. Woodin, president of the American Car & Foundry Company, of New Jersey, in arranging the deal, in a letter to stockholders of the Brill Company, in part outlined the plan as follows:

"The object of the plan and reorganization, so far as the stockholders of the J. G. Brill Company are concerned therein, is to afford them opportunity to share in the advantages of a large and growing bus business conducted in conjunction with their present car business under co-operative management."

Obituary

William B. Albright, a director of the Sherwin-Williams Company, Cleveland, Ohio, died suddenly on December 28 while visiting in Cleveland. He was born in Philadelphia, Pa., on July 17, 1855, and has been connected with the Sherwin-Williams Company since January, 1885, serving as a director since 1894.

John Kirby, Jr., who was president of the National Association of Manufacturers from 1909 to 1913, died at his home in Dayton, O., on December 29 at the age of 75. In 1871 he became superintendent of Post & Company, Cincinnati, O., and in 1883 went to Dayton as vice-president of the Dayton Manufacturing Company. In 1917 he became president of that company and continued in that capacity until the time of his death. Mr. Kirby was also president of the Headlight Company and vice-president of the Mercantile Metal Milling Company. He was a member of the executive committee of the Canadian Car & Foundry Company in charge of production of large quantities of ammunition for the Russian government during the war.

Lewis S. Louer, vice-president of the Engineering and Contracting Publishing Company, Chicago, died suddenly on January 9. He was born in Newcastle, Pa., on June 11, 1874, and graduated from the mechanical engineering school at Cornell University in 1894. In 1900 he was appointed western manager of Engineering Record and later was appointed western manager of the F. W. Dodge Company. In 1918 he was appointed vice-president of the Engineering and Contracting Publishing Company, which position he held until his death. He was a director of the American Road Builders' Association.

R. A. Storm, manager of the structural department of the Morgan Engineering Company, Alliance, Ohio, died at his home on January 2. He was born in Altoona, Pa., forty-three years ago. Prior to 1901 Mr. Storm was connected with the Pittsburgh Steel Car Company in Pittsburgh, and in 1901 he went with the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., as assistant superintendent of the structural department. In 1916, he entered the service of the Morgan Engineering Company as superintendent of the structural department and when this company took up the rebuilding of locomotives Mr. Storm was made manager of the boiler department, and afterwards manager of the structural department.

Railway Construction

ATLANTIC COAST LINE.—This company is contemplating the erection of a station at Naples, Fla.

BALTIMORE & OHIO.—This company has asked for revised bids for the construction of a coaling station at Mitchell, Ind.

BALTIMORE & OHIO.—A contract has been awarded to the Empire Construction Company, Baltimore, Md., for the reconstruction of bridges on the Lake branch, Akron division, to cost approximately \$150,000.

MINNEAPOLIS, NORTHFIELD & SOUTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from Golden Valley to Crystal, Minn., 6 miles.

MISSOURI PACIFIC.—This company will soon ask for bids for the construction of a second track between Washington, Mo., and Berger, and between Algoa, Mo., and Jefferson City. A contract has been awarded for a reclamation plant at Sedalia, Mo., to J. C. Duncan, St. Louis, Mo.

NEW YORK CENTRAL.—A contract has been awarded to the Walsh Construction Company, Davenport, Iowa, for the elimination of grade crossings at South William, Kemp and Water streets, Newburgh, N. Y.; cost approximately \$210,000. A contract has been awarded to the Cleveland Crane & Engineering Company, New York, for the manufacture and erection of an electric traveling Gantry crane at its Thirtieth street, New York, yard at a cost of approximately \$27,000.

PENNSYLVANIA.—This company has awarded a contract to the McNichol Paving & Construction Company, Philadelphia, for filling in in connection with its new \$2,200,000 produce yard to be constructed at Delaware avenue and Packer street, that city.

PENNSYLVANIA.—Tentative agreement has been reached between this company and city authorities of Newark, N. J., calling for a new station at that point for the railroad and the Hudson & Manhattan, an extension to the latter road and bridges for 6 tracks across the Passaic river. No contracts between the city and the railroad have been signed and will await further conferences between the parties.

SEABOARD AIR LINE.—The Interstate Commerce Commission has extended until February 1 the date that this company and its subsidiaries must begin the construction of their extensions in Florida.

SOUTHERN ILLINOIS & KENTUCKY.—This company has asked for bids for the construction of a reservoir at Blue Ford, Ill.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The construction of the Jefferson avenue yard, which will be utilized for passenger train assembling, storage, cleaning and a repair yard, will include 300,000 cu. yd. of excavation and grading, the reconstruction and re-location of sewers, a 350-ft. extension of the Jefferson Avenue viaduct, a reinforced concrete structure for the foot bridge on West Jefferson avenue, a concrete retaining wall along Scott avenue from Twenty-second street west, a concrete service building two stories high, 20 by 500 ft., and other yard buildings, and the construction of 21 storage tracks, each 1,000 ft. long. Contracts for the viaducts and sewers have been let to the Fruin-Colnon Construction Company, St. Louis, Mo. All other work is being done by the company's own forces.

THE NORTHLAND TRANSPORTATION COMPANY has been granted permission by the Minnesota Railroad and Warehouse Commission to take over two routes of the Boulevard Transportation Company, one from Minneapolis, Minn., to Mound on Lake Minnetonka and the other from Mound to Willmar. The Northland Transportation Company has also asked for permission to take over a route operated by the Midwest Transportation Company between the Twin Cities and Tracy.

Railway Financial News

BALTIMORE & OHIO.—Equipment Trusts.—Kuhn, Loeb & Co., Speyer & Co., and the National City Company, have sold \$8,370,000 4½ per cent equipment trust certificates, series C, at an average price of 98.68 per cent, giving an average yield of 4.71.

1925 Earnings.—President Daniel Willard, in an address before the tenth annual meeting of the Maryland Agricultural Society and the Maryland Farm Bureau Federation on January 7, gave details concerning the property's 1925 earnings as follows:

"Its gross earnings in 1925 were about \$237,000,000, and its net earnings \$58,428,000, and after deducting from this amount payments for taxes of about \$10,000,000, equipment and joint facility rents, there was left approximately \$43,058,000, or about 5.27 per cent on the investment. From this latter amount, during 1925 the company was obliged to pay \$26,640,000 for interest, and after adding non-operating income, such as interest on securities owned by the Baltimore & Ohio, there remained a net surplus, after the year's operations, of \$21,000,000, from which the company paid 4 per cent upon \$58,863,300 preferred stock, and 5 per cent upon \$152,000,000 common stock, leaving about \$11,000,000 remaining from the year's operation, all of which was used to pay for additions and betterments to the property."

BOSTON & MAINE.—Committee to Select New Executive.—Homer Loring, chairman of the executive committee, W. Rodman Peabody and Harry G. Stoddard have been constituted a sub-committee of the executive committee to select a successor to President J. H. Hustis, whose resignation takes effect at the annual meeting in April.

CHESAPEAKE & OHIO.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Pond Fork & Bald Knob.

CHICAGO GREAT WESTERN.—Notes.—This company has applied to the Interstate Commerce Commission for authority to issue definitive notes in \$1,000 denominations in exchange for a note of \$950,000 to the director general of railroads which has been sold.

CHICAGO, MILWAUKEE & ST. PAUL.—Hearings.—Hearings in the Interstate Commerce Commission's investigation of the St. Paul receivership were resumed in New York on January 7. The hearings were held in the assembly room of the Merchants' Association in the Woolworth building before Commissioner Cox.

On January 7, the chief witness was W. W. Colpitts, of Coverdale & Colpitts, the firm of consulting engineers which reported on the financial structure and earning power of the property. Nathan L. Miller, former governor of New York, representing the Bondholders' Defense Committee in questioning Mr. Colpitts, apparently desired to establish that the receivership had been agreed upon, and that Coverdale & Colpitts had been employed to make a report justifying such a course of action. He questioned the accuracy of certain of the engineers' figures, and sought to ascertain the reason for what he thought were serious discrepancies. Mr. Colpitts said he had never mentioned a receivership to any member of the railroad company during his investigation. He was not certain, however, that he had not mentioned a receivership to certain financiers interested in the St. Paul. Mr. Colpitts denied that any member of Kuhn, Loeb & Co. had spoken to him about investigating the railroad's financial structure before he was engaged to do so by the directors of the railroad. He also testified that he made a preliminary report of his investigation of the company's affairs March 3, but followed this with a written report March 16. He was paid \$72,000 for the investigation. Considerable was made of the promptness with which he had rendered his bill. Mr. Miller also questioned the witness concerning the acquisition and retention by the St. Paul of the Chicago, Terre Haute & Southeastern and the Chicago, Milwaukee & Gary.

On January 8, Mr. Colpitts was examined further, the hearings being signalized by frequent clashes between the witness on the one side and Mr. Miller and Dan H. Grady, assistant attorney of Wisconsin, on the other. Mr. Grady attempted to show that Mr. Colpitts merely had accepted the figures supplied him by officials of the St. Paul, and had made the sort of report which the company wanted. "Is it not a fact," he said, "that you had no information regarding the financial position of the St. Paul except

that given by the officials of the road, and is it not also true that you did not include in your estimate of the company assets timber lands owned by the St. Paul, which, for purposes of taxation, were valued at \$26,000,000 in 1913, but which now probably are worth \$50,000,000?"

Attorney General Ekern of Wisconsin said that he and Mr. Grady intended to show that the Kuhn, Loeb & Co. and the National City Company reorganization plan was directly connected with the receivership.

After Mr. Colpitts, President Byram was called. The questioning of the latter was in the form of a review of the history of the road since Mr. Byram became president in 1917.

One of the interesting points brought out at the hearings on January 11 was the fact that Mr. Byram had purchased 1,000 shares of stock after he had been appointed receiver, which stock had appreciated in value from \$9 to \$16 a share. Mr. Byram refused to admit that there was any impropriety in this purchase. This point had also been brought out at the hearings in Chicago. Mr. Miller brought out in the same connection that Mr. Byram, since the receivership, had negotiated the purchase of \$15,000,000 worth of equipment. Mr. Byram admitted that this purchase, while it would add to the operating expenses of the railroad during the receivership, would increase the value of stockholders' equities in future.

Mr. Miller read into the records two letters that he believed "most significant." One from Leon P. Brown, a large bondholder, addressed to Mr. Byram, read in part:

I am wondering what you are doing to rehabilitate the growing pessimism of the St. Paul's stockholders which has been strengthened by the fact that there have been no dividends in eight years. The road is in a better condition than the New York, New Haven & Hartford, and if they did not have to undergo a reorganization I see no reason why the St. Paul should. I hear that certain bankers would like to reorganize the St. Paul for the enormous profits and commissions they would get. A reorganization would be a travesty on justice. If there is a likelihood of it why do you not go to the security holders with the facts?

The other letter was written by Thomas Read to Mr. Maroney, the St. Paul's financial representative.

I have financial relations with two of New York's largest banks (the Corn Exchange and the Chase National). Would you approve, or do you think it would antagonize Kuhn, Loeb & Co., or National City Company, toward your company, if I were to ask either of the aforesaid banks if they would entertain a banker's loan of approval for collateral for, say, \$15,000,000, from the St. Paul, for three to five years' time, renewable every six months. In the event of your company paying 30 per cent of the 1925 issue, this would give you the funds and no commission from Kuhn, Loeb & Co., or the National City Company, and, of course, I would not accept anything.

Mr. Byram admitted no such plan had ever been brought to the security holders since any one of them could have spoiled any plan and he had not considered it possible to obtain their unanimous consent.

Through the printed copy of a creditors' bill introduced in evidence Friday and the later testimony of Mr. Byram, Mr. Miller brought out that although the directors of the St. Paul had not actually voted for a receivership until March 17, a special committee, of which Mr. Byram had been a member, had reached such a decision several weeks before that time. This was the first time Mr. Byram had admitted that a receivership ever had been seriously considered before the decision actually was made by a vote of the directorate.

Mr. Miller spent considerable time concerning the acquisition of the Chicago, Terre Haute & Southeastern and the Chicago, Milwaukee & Gary. These had been losing propositions until acquired by the St. Paul, and no other system had been after them. Mr. Byram insisted, however, that they had been made to pay since their acquisition. He said that his first act as a receiver was to obtain a court order that the interest on the Terre Haute and Gary bonds be paid so they should not be lost by default.

The hearing was resumed on Tuesday, January 12.

Mr. Byram was questioned on his testimony before the Senate committee discussing the bill to reduce the rate of interest on railroad loans owing to the government. He testified then, it was brought out, that it would be necessary to see the bondholders "with a view to obtaining an extension of the June maturities." He said he had known for some time before he made this statement that extension was not possible. The questioning attorneys made much of the apparent conflict in this testimony.

Commissioner Cox announced at this hearing that the commission would refuse to name an expert to conduct the separate investigation of the St. Paul's affairs which the Bondholders' De-

fense Committee had announced through former Governor Miller it would undertake. Mr. Cox said the government's investigators were in possession of a mass of important data, and that he had received from some of the stockholders of the St. Paul requests regarding separate investigations and had discouraged all of them on the ground that such inquiries would not be considered necessary after the government completed its investigation.

T. A. Hamilton, who also testified at this session, said that low freight rates had been one of the chief causes of the failure of the railroad.

My Byram, again called on Wednesday, was permitted to read a statement. He said:

I have tried to tell the truth about everything connected with the affairs of the St. Paul, and if I had been permitted to explain fully some of my statements I think some things which have been misinterpreted would have been cleared up.

I naturally resent the implication that I, in any way, attempted to deceive the Senate regarding the efforts made by me and the St. Paul directors to extend the maturities of the \$48,000,000 bonds beyond June 1, 1925.

I have been made to appear here as having attempted such deception. Some of the newspapers declare I told the Senate Committee we were making arrangements to extend the bonds. I have here the record of my testimony, which shows just the contrary to be the case.

I informed the Senate Committee that, while we hoped to find some way out of our difficulty, the terms of the mortgage were such as to prevent any extension of the loan. I also told the Senate Committee we saw no way of arranging such extension.

On Wednesday afternoon, Commissioner Cox took the deposition of Thomas Reed, whose letter is quoted above but who is at present confined to his home in Brooklyn, N. Y., by illness.

The hearings will be resumed in Washington.

CHICAGO, ROCK ISLAND & PACIFIC.—Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a branch from Preemption, Ill., to Cable, 5.293 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,000,000 of general mortgage 4 per cent bonds and \$1,000,000 of first and refunding mortgage 4 per cent bonds, for the purpose of reimbursing the treasury; the general mortgage bonds to be exchanged for the first and refunding mortgage bonds.

CHICAGO, SPRINGFIELD & ST. LOUIS.—See Jacksonville & Havana.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—Stock Dividend.—This company has applied to the Interstate Commerce Commission for authority to issue \$5,980,000 of common stock as a stock dividend.

DENVER & SALT LAKE.—Incorporation.—Articles of incorporation for the Denver & Salt Lake Railway Company have been filed with the secretary of Colorado to take over the Denver & Salt Lake Railroad Company, a Delaware corporation.

JACKSONVILLE & HAVANA.—Acquisition of Line.—The Interstate Commerce Commission has issued a certificate authorizing the Jacksonville & Havana to acquire and operate a line from Havana, Ill., to Jacksonville, 41.8 miles. It has also authorized the Chicago, Springfield & St. Louis similarly to operate a line extending from Springfield, Ill., to Lock Haven, 78.78 miles. The line to be taken over by the Chicago, Springfield & St. Louis is a part of the main line of the Chicago, Peoria & St. Louis, and that mileage to be taken over by the Jacksonville & Havana is a branch of that property. The commission issued a certificate on March 19, 1923, permitting the abandonment of the Chicago, Peoria & St. Louis but the abandonment did not take place, all of the line being now operated by receiver, except a portion between Grafton and St. Louis, which is being operated by the Alton & Eastern. On November 20, 1924, the Chicago, Peoria & St. Louis was sold in separate parcels at a foreclosure sale. The portion which is now to be taken over by the Jacksonville & Havana comprises two parcels which were sold for \$275,000. The line to be operated by the Chicago, Springfield & St. Louis comprised five parcels and was sold to individual purchasers for a total price of \$450,000. The two new companies propose to acquire their lines from the individual purchasers, the price for the Jacksonville line being \$351,500, and the price for the Springfield line being \$550,000. The new owners propose to sell a sizable proportion of their securities in the local communities. Neither company has as yet filed its application for authority to issue stocks or bonds.

KANSAS CITY NORTHWESTERN.—Abandonment.—This company asked for a certificate permitting it to abandon its line from Kansas City, Kan., to Seneca, from Axtell Junction, Kan., to Virginia, Neb., and from Menager Junction, Kan., to Leavenworth, a total of 161.57 miles. The operation of this company was discontinued November 30, 1919, by the receiver because of inability to obtain funds with which to pay operating expenses. It was taken out of receivership's hands in the early part of 1925 but operation was not resumed. The Interstate Commerce Commission dismissed the application for want of jurisdiction on the ground that inasmuch as the operation of the railroad was abandoned prior to the date that paragraph 18 of Section 1 of the Interstate Commerce Act became effective, and has not since been resumed, the question does not come within the commission's jurisdiction.

LAUREL FORK.—Final Value.—The Interstate Commerce Commission has placed the final value for rate-making purposes at \$366,396 as of 1916.

LEXINGTON UNION STATION COMPANY.—Final Value.—The Interstate Commerce Commission has found the final value for rate-making purposes as of 1917 to be \$776,498.

LITTLE RIVER.—Final Value.—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$191,961 as of June 30, 1916.

MAGMA ARIZONA.—Final Value.—The Interstate Commerce Commission has found the final value for rate-making purposes as of 1917 to be \$319,560.

MAINE CENTRAL.—Bonds.—The Interstate Commerce Commission has granted this company authority to procure the authentication and delivery of \$50,000 first and refunding mortgage 6 per cent bonds, series D, and to sell these bonds and \$3,950,000 previously authorized, making a total of \$4,000,000, at not less than 97½ per cent of par and accrued interest to Kidder, Peabody & Co. The purpose of this financing is to retire \$3,123,000 of notes payable to the United States, and to reimburse the company's treasury in connection with two bond issues of subsidiary companies which were previously matured and paid, and in addition \$497,000 is to be used for capital expenditures.

MAMMOTH CAVE.—Final Value.—The Interstate Commerce Commission has placed the final value for rate-making purposes as of 1916 at \$85,000.

MARION & EASTERN.—Final Value.—The Interstate Commerce Commission has placed the final value for rate-making purposes as of 1916 at \$80,000.

MISSOURI-KANSAS-TEXAS.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$18,217,726 of prior lien mortgage 6 per cent bonds to reimburse the treasury for expenditures and the Missouri-Kansas-Texas of Texas has asked authority for a nominal issue of \$4,763,438 of similar bonds to be delivered to the M.-K.-T. to reimburse it for advances.

NEW YORK CONNECTING.—This company has applied to the Interstate Commerce Commission for authority to issue \$3,500,000 of 5 per cent first mortgage bonds.

NEW YORK CONNECTING.—Bonds.—J. P. Morgan & Co., and Kuhn, Loeb & Co., have sold at 99½ \$3,500,000 5 per cent first mortgage bonds, series B, maturing August 1, 1953. These two houses joined in this offering because the New York Connecting is owned jointly by the New York, New Haven & Hartford, for which company J. P. Morgan & Co., are bankers, and the Pennsylvania for which Kuhn, Loeb & Co. are bankers. The issue is guaranteed principal and interest by the two parent companies.

PEORIA RAILWAY TERMINAL COMPANY.—Foreclosure Sale.—This company was sold to the Bankers' Trust Company, New York, for \$2,000,000, on January 6 at the foreclosure sale held at South Bartonville, Ill. The purchase was made under the mortgage which was foreclosed on orders issued in the federal court at Peoria. Only one bid was made at the sale.

ROCK ISLAND, ARKANSAS & LOUISIANA.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,600,000 of first mortgage gold bonds to be delivered to the Chicago, Rock Island & Pacific in payment for advances.

SEABOARD AIR LINE.—Bond Extension.—This company has offered to holders of the \$1,000,000 Seaboard Air Line-Raleigh & Augusta Air Line first mortgage 6 per cent bonds, which matured on January 1, 1926, to extend these bonds to January 1, 1931, with interest at 5 per cent. The extended bonds will be subject to prior redemption on 30 days' notice. Bonds must be deposited prior to January 15, 1916, with the Continental Company, Baltimore.

SOUTHERN PACIFIC.—Control of Holton Inter-Urban Company.—The Interstate Commerce Commission has authorized this company to acquire by purchase of capital stock, the Holton Inter-Urban, which operates a line from El Centro to Holtville, 10.48 miles, in Imperial County, Calif.

SOUTHERN PACIFIC.—Control of Houston & Texas Central.—Purchase by the Southern Pacific Company for approximately \$5,000,000, or \$200 a share, of the 25,000 shares of Houston & Texas Central Railroad Company, a Southern Pacific subsidiary, held by minority stockholders, settles, says the Wall Street Journal, a 36-year struggle for control of the road. The Wall Street Journal gives further details as follows:

In 1889, Houston & Texas Central Railway Co. was reorganized into the Houston & Texas Central Railroad Co. Several years before reorganization, Southern Pacific Co. had acquired through one of its subsidiary corporations a controlling interest and in the reorganization acquired all the stock of the railroad company.

Before the reorganization was completed, minority stockholders attacked it and subsequently carried the case four times to the Supreme Court of the United States. Early suits attacked the validity of the reorganization and attempted to set the foreclosure aside, but were unsuccessful.

In 1913, a suit begun in the New York District Court sought to obtain in exchange for their old stock a prorata share of stock in the new company, and the contention was upheld, decree stating that the Southern Pacific Co. held a proportionate portion of the new company stock as trustee for minority stockholders. Circuit Court of Appeals affirmed the decree, but Supreme Court modified it, ordering minority holders to share in reorganization and additions and betterments expenses. The District Court was commissioned to determine cost of the stock to minority holders and a special master was appointed.

The special master found the Southern Pacific Co. entitled to all reimbursement for which it contended, but the District Court refused to confirm the master's report, allowing only a small amount in addition to reorganization expenses. A further appeal was taken, but minority stockholders were ultimately upheld in a decision a year ago.

Southern Pacific paid \$26 a share on its stock in the reorganization. Minority stockholders had to pay that amount in addition to interest and reorganization charges, but received about \$200 a share under the settlement now reached. Houston & Texas Central comprises part of Southern Pacific's main lines northwest of Houston, to Austin, Waco, Fort Worth, Dallas and Shreveport.

ST. LOUIS & O'FALLON.—Tentative Valuation.—The Interstate Commerce Commission has issued a tentative valuation report in which the final value for rate-making purposes as of 1919 is placed at \$810,000.

UTAH.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the National Coal Railway and to assume obligation and liability for its bonds.

WABASH.—Equipment Trust Certificates.—The Interstate Commerce Commission has authorized the issuance of \$4,185,000 equipment trust certificates, series F, to be sold to Kuhn, Loeb & Co., at 96.25 and accrued dividends. The equipment includes 2,000 freight cars, 25 switching locomotives and 20 baggage cars, having an approximate total cost of \$5,855,625.

Dividends Declared

Atlanta & West Point.—Extra cash, 20 per cent, payable February 1 to holders of record January 20.

Delaware, Lackawanna & Western.—Extra, \$1; \$1.50, quarterly, both payable January 20 to holders of record January 9.

Missouri-Kansas-Texas.—Preferred, \$1.25, quarterly, payable February 1 to holders of record January 15.

Wabash.—Preferred A, \$1.25, quarterly, payable February 25 to holders of record January 23.

Trend of Railway Stock and Bond Prices

	Jan. 12	Last Week	Last Year
Average price of 20 representative railway stocks	96.93	98.17	82.25
Average price of 20 representative railway bonds	94.69	94.32	90.26

Railway Officers

Financial, Legal and Accounting

J. T. Willcox, assistant auditor of the Louisville, Henderson and St. Louis, with headquarters at Louisville, Ky., has been promoted to auditor, to succeed **G. H. Lamkin**, deceased. **W. W. Weber** has been appointed assistant auditor, to succeed Mr. Willcox.

Gilbert Gannon, assistant secretary of the St. Louis-San Francisco, with headquarters at New York, **G. B. Perkins**, auditors, with headquarters at St. Louis, Mo., **W. E. Bernthal**, auditor of freight accounts, with headquarters at St. Louis, Mo., **John C. Starkey**, auditor of passenger accounts, with headquarters at St. Louis, Mo., and **J. L. McCormack**, superintendent of freight loss and damage claims, with headquarters at Springfield, Mo., have had their jurisdictions extended over the Muscle Shoals, Birmingham & Pensacola (a subsidiary of the St. Louis-San Francisco).

John E. Baxter, whose promotion to general auditor of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, was reported in the *Railway Age* of January 9, was born on August 19, 1869, in Ireland, and entered railway service in December, 1889, on the Atchison, Topeka & Santa Fe, at Topeka, Kan. From February, 1890, to March, 1893, he was a clerk on the Sonora Railway (a subsidiary of the Southern Pacific, formerly owned by the Atchison, Topeka & Santa Fe) at Guaymas, Mexico, and from the latter date until November, 1901, he was consecutively clerk and traveling auditor of the Atlantic & Pacific (now a part of the Atchison, Topeka & Santa Fe) at Albuquerque, N. M., and traveling auditor and traveling accountant of the Santa Fe Pacific (now a part of the Atchison Topeka & Santa Fe) at Los Angeles, Cal. In December, 1901, he was appointed traveling accountant of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, which position he held until March, 1903, when he became auditor of the Gulf, Beaumont & Kansas City, with headquarters at Beaumont, Tex., when the company was leased to the Gulf, Colorado & Santa Fe. He held the latter position until June, 1903, when he was appointed auditor of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., which position he held until October, 1905. He was then appointed assistant general solicitor of the Atchison, Topeka & Santa Fe, with headquarters in Chicago, which position he has held until his recent promotion.

Operating

W. H. Blake has been appointed superintendent of the Florida Central & Gulf, with headquarters at Tampa, Fla.

L. C. Gram has been appointed assistant superintendent of the Southern Pacific, with headquarters at Roseburg, Ore., to succeed **W. H. McBean**, deceased.

L. R. Doggett, assistant trainmaster of the Akron division of the Pennsylvania, with headquarters at Columbus, O., has been transferred to the Eastern division, with headquarters at Mansfield, O.

Frank L. Birdsall, trainmaster of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn., has been promoted to assistant superintendent of the Northern Pacific and also superintendent of the Duluth Union Depot & Transfer Company, with the same headquarters, to succeed **G. W. Atmore**, deceased.

J. E. Mulick, superintendent of the Wyoming division of the Union Pacific, with headquarters at Cheyenne, Wyo., has been transferred to Omaha, Neb., to succeed **C. A. Moore**, transferred, and will be succeeded by **W. C. Wolcott**, superintendent of the Western division, with headquarters at Green River, Wyo., who in turn will be succeeded by **H. A. Connett**, assistant superintendent at Cheyenne.

W. C. Guthrie, superintendent of the Schreiber division of the Algoma district of the Canadian Pacific, with headquarters at Schreiber, Ont., has been transferred to the Woodstock division of the New Brunswick district, with headquarters at Woodstock, N. B. **B. J. Quilty**, assistant superintendent of the Smith Falls division of the Quebec district, with headquarters at Smith Falls, Ont., has been promoted to division superintendent, succeeding Mr. Guthrie. **F. Davis**, chief train dispatcher of the Laurentian division of the Quebec district has been promoted to transportation assistant at North Bay, Ont., succeeding **G. W. Hutcheson**, who has retired from service.

Traffic

H. L. Hollister has been appointed general agent of the Wichita Falls & Southern, with headquarters at Breckinridge, Tex.

W. M. Penick has been appointed assistant traffic manager of the Fruit Dispatch Company, with headquarters at New Orleans, La.

W. C. Johnson, assistant freight claim agent of the Chicago & North Western, has been promoted to freight claim agent to succeed **B. A. Little**, resigned.

F. F. Johnson has been appointed general agent of the Chicago, Burlington & Quincy, with headquarters at Boston, Mass., succeeding **Alex. Stocks**, deceased.

Howard E. Simpson has been appointed district passenger agent of the Central of New Jersey, with headquarters at Newark, N. J., succeeding **C. K. Armstrong**, deceased.

J. L. Ferguson, assistant to the passenger traffic manager of the Chicago & North Western, with headquarters at Chicago, retired on January 1, after 58 years of railway service.

Lynn R. Challoner, freight agent of the Northern Pacific, with headquarters at Fargo, N. D., has been promoted to assistant general freight agent, with headquarters at St. Paul, Minn.

W. H. Dana has been appointed assistant general freight agent of the Union Pacific System, with headquarters at Omaha, Neb., succeeding **F. B. Choate**, promoted to general freight agent.

LeRoy Morris, general freight and passenger agent of the Mississippi Central, with headquarters at Hattiesburg, Miss., has been promoted to traffic manager, with the same headquarters, a newly created position.

W. D. Dimmitt has been appointed assistant foreign freight agent of the Norfolk & Western, with headquarters at New York. **W. C. Sawyer** has been appointed assistant foreign freight agent, with headquarters at Chicago.

C. H. Lippincott, coal freight agent of the Pennsylvania, with headquarters at Pittsburgh, has been transferred to Philadelphia in place of **J. T. Carbine**, promoted. **S. A. Latimer**, chief clerk to the coal traffic manager at Pittsburgh, has been promoted to coal freight agent, with the same headquarters in place of Mr. Lippincott.

R. E. Smith, assistant to the freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to assistant general freight agent, with the same headquarters, succeeding **J. G. Morrison**, promoted. **J. J. Heron** has been appointed assistant to the freight traffic manager in place of Mr. Smith.

R. J. Fornshell, traveling passenger agent of the New York Central, with headquarters at Memphis, Tenn., has been appointed division passenger agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Dayton, O., to succeed **M. L. Griffin**, who has been transferred to Cleveland, O., to succeed **D. N. Lemon**, who has been transferred to Minneapolis, Minn.

J. E. Carter has been appointed assistant general freight and passenger agent of Morgan's Louisiana & Texas Railroad and Steamship Company, the Louisiana Western, the Iberia & Vermilion, the Lake Charles & Northern and the Franklin & Abbeville Railroads, with headquarters at Lake Charles, La. **Joseph Spear** has been appointed division freight and passenger agent, with headquarters at Alexandria, La.

J. A. Lucey, passenger traffic manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been promoted to traffic manager, the position of passenger traffic manager having been abolished. **J. R. Shannon**, general agent, traffic department, with headquarters at Chicago, has been appointed general passenger agent, with headquarters at Minneapolis, Minn., and will be succeeded by **E. G. Gustafson**, general agent, passenger department, with headquarters at Cleveland, O., who in turn will be succeeded by **R. J. Thomas**, traveling agent, with headquarters at Pittsburgh, Pa.

William T. LaMoure, freight traffic manager of the Boston & Maine, has been appointed freight assistant to the vice-president. He was born on October 14, 1861, at Worcester, N. Y., and was educated



W. T. LaMoure

in the public schools. He entered railway service in 1882, as a telegraph operator on the Boston, Hoosac Tunnel & Western (now part of the Boston & Maine). In 1885 he was appointed station agent at Petersburg Junction, N. Y. One year later he was transferred to Valley Falls, and then became agent at Johnsonville, when the Boston, Hoosac Tunnel & Western was consolidated with the Fitchburg Railroad. He was appointed freight agent of the Fitchburg Railroad in 1892, at Troy, N. Y.;

three years later he was transferred to Boston as chief clerk of the local freight office, and two years later became local freight agent in charge of the Boston freight terminals of the Fitchburg Railroad, and continued in that position after the Fitchburg was leased to the Boston & Maine. In 1907 he was appointed foreign freight agent, and in January, 1914, was appointed assistant general freight agent of the Boston & Maine. In July, 1915, he became general freight agent, and on December 1, 1917, became freight traffic manager, which position he was holding at the time of his recent appointment to freight assistant to the vice-president.

James T. Carbine, coal freight agent of the Pennsylvania, has been appointed coal traffic manager, with headquarters at Pittsburgh, Pa. He was born on August 27, 1890, at Fernwood, Pa., and was educated in the public schools and at Drexel Institute, Philadelphia. He entered railway service on November 12, 1906, in the secretary's office of the Pennsylvania, at Philadelphia, and August 1, 1909, was transferred to the coal traffic department. He was appointed coal freight agent at Philadelphia on June 1, 1922, which position he was holding at the time of his recent appointment to coal traffic manager.

J. T. Hays, traveling passenger agent of the New York Central, with headquarters at Milwaukee, Wis., has been appointed general agent, passenger department, with headquarters at Jacksonville, Fla. **H. F. Bostwick**, general agent, passenger department, with headquarters at Minneapolis, Minn., has been transferred to San Francisco, Cal. **C. C. Crane**, general agent, passenger department, with headquarters at San Francisco, has been appointed assistant general agent. **F. J. Bambach**, traveling passenger agent, with headquarters at St. Paul, Minn., has been appointed general agent, passenger department, with

headquarters at Minneapolis, Minn., to succeed H. F. Bostwick. **C. E. Nerland**, city passenger agent of the Michigan Central, with headquarters at Chicago, has been promoted to general agent passenger department of the New York Central, with headquarters at Seattle, Wash., to succeed L. F. Jones, deceased.

J. A. Lucey, passenger traffic manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been promoted to traffic manager, in charge of both passenger and freight traffic, and the positions of freight traffic manager and passenger traffic manager have been abolished. **D. M. Denison**, freight traffic manager, has been appointed special representative, with headquarters at Minneapolis, reporting direct to the chief operating officer. **J. R. Shannon**, general agent, traffic department, with headquarters at Chicago, has been promoted to general passenger agent, with headquarters at Minneapolis, Minn.

James R. MacAnanny, assistant general freight agent of the Boston & Maine, has become general freight agent in charge of rates and tariffs, with headquarters at Boston, Mass. Mr. MacAnanny was born on February 26, 1891, at Somerville, Mass., and was educated in the grammar schools. He entered railway service on July 17, 1905, with the Boston & Maine, as a clerk in the local freight office at Boston-Warren Bridge, and on May 25, 1908, was transferred to the general freight office. He worked through the various positions, and on July 1, 1915, was placed in charge of the tariff bureau. He became assistant general freight agent on January 1, 1922, which position he was holding at the time of his recent appointment to general freight agent.

Frank F. Farrar, assistant general freight agent of the Boston & Maine, has become general freight agent in charge of service and solicitation. **William T. LaMoure**, freight traffic manager, has been appointed freight assistant to the vice-president. **F. T. Grant**, passenger traffic manager, has been appointed passenger assistant to the vice-president. He will devote his attention largely to the new problems created by the rapid growth of highway passenger transportation, and the Boston & Maine's effort to co-ordinate this with rail service. A sketch of Mr. Grant's railroad career appeared in the *Railway Age* of January 31, 1925, on page 347. **Walton O. Wright**, general passenger agent, will retain that title with enlarged duties. **E. R. Holmes** has been appointed assistant general passenger agent, and he has been succeeded by **H. E. Hewey** as district passenger agent. **P. J. Mullaney** has been appointed assistant general freight agent. The Boston & Maine has created the positions of district manager at Worcester, Mass., and Portland, Me. These positions will carry authority over all Boston & Maine activities within the districts involved, enabling the manager to bring together the facilities of the traffic and operating departments to improve service. **E. W. Abbott**, general freight agent, has become the district manager at Portland. **James M. Gall**, general agent at New York City, has become district manager at Worcester.

Mechanical

P. W. Kiefer, engineer of rolling stock of the New York Central, has been appointed chief engineer of motive power and rolling stock, succeeding **F. H. Hardin**, promoted to assistant to the president. **E. P. Moses**, general equipment inspector of rolling stock, has been appointed engineer of rolling stock, succeeding Mr. Kiefer. Both have headquarters at New York.

Engineering, Maintenance of Way and Signaling

H. J. Shaw, division engineer of the Akron division of the Pennsylvania, with headquarters at Akron, O., who has been off duty for some time because of ill health, has resumed his duties.

W. O. Cudworth, division engineer of the Sudbury division of the Canadian Pacific, with headquarters at Sudbury, Ont., has been promoted to assistant engineer of maintenance, Eastern lines, with headquarters at Montreal, Que., succeeding

Emmett Keough, resigned, to become Chicago representative of the American Fork and Hoe Company. **J. M. Silliman**, assistant engineer at North Bay, has been promoted to division engineer, succeeding Mr. Cudworth.

George W. Snyder, who has been promoted to assistant chief engineer in charge of maintenance of the Pennsylvania, was born on January 9, 1866, at Pottsville, Pa., and was educated at Lehigh University.

He entered railway service on November 1, 1884, as a rodman on the Renovo division of the Pennsylvania. From January 1, 1886, to August 1, 1890, he was assistant supervisor of the same division, and from August 1, 1890, to June 10, 1897, was supervisor. On the latter date he became supervisor of the Baltimore division, and on July 1, 1900, became supervisor of the Altoona yard. From January 1, 1901, to June 1, 1903, he was division engineer of the Monongahela division, and from that date until April 1, 1907, was division engineer of the Pittsburgh division. At that time he became principal assistant engineer of the western Pennsylvania division at Pittsburgh, Pa., which position he held until October 25, 1917, when he became assistant engineer maintenance of way, Eastern lines, of the Pennsylvania. On March 1, 1919, he became general storekeeper of the Eastern region of the same road, and in February, 1924, was appointed assistant to the store's manager, which position he was holding at the time of his recent promotion to chief engineer in charge of maintenance.



G. W. Snyder

Special

W. E. Cline, assistant transportation agent of the Canadian Pacific, with headquarters at Moose Jaw, Sask., has been promoted to transportation and fuel agent, with headquarters at Vancouver, B. C.

Obituary

James Duncan, president of the Alton & Eastern and of the Litchfield & Madison, with headquarters at Alton, Ill., died on January 9 from peritonitis.

Charles K. Armstrong, for 20 years district passenger agent of the Central of New Jersey at Newark, N. J., died at his home in that city on January 7.

Fred A. Barber, assistant general freight agent of the Wabash, with headquarters at St. Louis, Mo., died in that city on January 2 following an illness of pneumonia.

John H. Ells, for many years auditor and assistant treasurer of the Davenport, Rock Island & North Western, died at Davenport, Iowa, December 22, terminating an illness of short duration.

H. B. Henry, assistant to the general purchasing agent of the Southern Pacific, with headquarters at San Francisco, Cal., died on December 21. Mr. Henry had been in the service of the company for about 30 years.

William S. Kirby, superintendent of the Chicago terminal of the Chicago, Burlington & Quincy from April, 1905, to January, 1912, and from the latter date until June, 1913, a special inspector, with headquarters at Chicago, died in Lansing, Mich., on January 5.